AIREDALE

air conditioning for every environment

AlphaCool

Upflow – Precision Air Conditioning
8kW - 101kW

TECHNICAL MANUAL

About Airedale Products & Customer Services

WARRANTY

All AIAC products or parts (non consumable) supplied for installation within the UK mainland and commissioned by an AIAC engineer, carry a full Parts & Labour warranty for a period of 12 months from the date of commissioning or 18 months from the date of despatch, whichever is the sooner.

Parts or Equipment supplied by AIAC for installation within the UK or for Export that are properly commissioned in accordance with AIAC standards and specification, not commissioned by an AIAC engineer; carry a 12 month warranty on non consumable Parts only from the date of commissioning or 18 months from the date of despatch, whichever is the sooner.

Parts or equipment installed or commissioned not to acceptable AIAC standards or specification invalidate all warranty.

Warranty is only valid in the event that

In the period between delivery and commissioning the equipment: is properly protected & serviced as per the AIAC installation & maintenance manual provided where applicable the glycol content is maintained to the correct level.

In the event of a problem being reported and once warranty is confirmed as valid under the given installation and operating conditions, the Company will provide the appropriate warranty coverage (as detailed above) attributable to the rectification of any affected Airedale equipment supplied (excluding costs for any specialist access or lifting equipment that must be ordered by the customer).

Any spare part supplied by Airedale under warranty shall be warranted for the unexpired period of the warranty or 3 months from delivery, whichever period is the longer.

To be read in conjunction with the Airedale Conditions of Sale - Warranty and Warranty Procedure, available upon request.

CAUTION

Warranty cover is not a substitute for maintenance. Warranty cover is conditional to maintenance being carried out in accordance with the recommendations provided during the warranty period. Failure to have the maintenance procedures carried out will invalidate the warranty and any liabilities by Airedale International Air Conditioning Ltd.

SPARES

A spares list for 1, 3 and 5 years will be supplied with every unit and is also available from our Spares department on request.

TRAINING

As well as our comprehensive range of products, Airedale offers a modular range of Refrigeration and Air Conditioning Training courses, for further information please contact Airedale.

CUSTOMER SERVICES

For further assistance, please e-mail: ***enquiries@airedale.com*** or telephone:

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For information, visit us at our Web Site: ***www.airedale.com***

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General Description

UNIT IDENTIFICATION

ALPHACOOL PRECISION AIR CONDITIONING RANGE	
V	Upflow Configuration
9 - 95	Model Size (Expressed as Nominal Cooling in kW)
A	Air Cooled Remote Condensing Unit
X	Air Cooled Remote Condenser
CW	Chilled Water
D	Dual Circuit
AT	AIRETronix Controls
Example	**V31AD-AT**

INTRODUCTION

Designed to provide environmental Precision air conditioning tolerances within the conditioned space, such as Telecommunication Facilities, Computer Rooms and Clean Rooms, the AlphaCool range is available with a choice of direct expansion air cooled or chilled water and comprises 48models. Full function units provide full control of temperature, humidity and filtration.

A full range of Airedale air cooled condensing units and condensers are available with the direct expansion indoor units to provide matched system and Airedale air cooled water chillers are available to complement the chilled water indoor units.

Free Cooling energy saving can be achieved using the chilled water unit matched with the Airedale Ultima Free Cooling Chiller.

The unit is designed for the use of R407C, please refer to ***Optional Extras - General*** for alternative refrigerants.

This manual covers the full range of **Upflow** configured models. For **Downflow** configured models, please refer to the AlphaCool **-DF** ***Technical Manual***.

The **Downflow** configured models benefit from the addition of the energy saving Glycol Free Cooling system, designed to reduce operating costs during cooler periods of the year.

CE DIRECTIVE

CE Airedale certify that the equipment detailed in this manual conforms with the following EC Directives:

Electromagnetic Compatibility Directive (EMC)	**2004/108/EC**
Low Voltage Directive (LVD)	**2006/95/EC**
Machinery Directive (MD)	**89/392/EC in the version 2006/42/EC**
Pressure Equipment Directive (PED)	**97/23/EC**

To comply with these directives appropriate national & harmonised standards have been applied. These are listed on the Declaration of Conformity, supplied with each product.

General Description

STANDARD FEATURES

Construction

Unit cabinets are manufactured from galvanised sheet steel coated with epoxy baked powder paint to provide a durable finish.

Standard unit colour is Light Grey (RAL 7035).

Internal strength and rigidity is provided by a welded space frame constructed of channel profile folded steel.

Cabinets are lined internally with fire resistant 20mm foam (UL94 V0) for thermal and acoustic insulation.

The cabinet doors are full height, hinged and key lock secured. Hinge arrangement allows flexible door opening/removal for improved access.

Rubberised door seals reduce sound breakout and eradicate leakage.

For ease of maintenance, the front left hand control panel door may be safely opened while the unit is in operation.

Unit design incorporates a series of M6/M8 fixings to the top face for offering up customer ductwork, please contact Airedale for further details.

Sizes 9 - 55

As standard the units are supplied with a louvred grille to the cabinet doors for front return air configuration in matching cabinet colour.

Size 65 - 95

As standard the units are supplied with an egg crate grille to the cabinet doors for front return air configuration in matching cabinet colour.

Refer to ***Optional Extras - General*** for discharge and return options.

Evaporator
(A & X Models)

Large surface area coil(s) ideally positioned to optimise airflow and heat transfer, manufactured from refrigeration quality copper tubes with mechanically bonded aluminium fins.

The copper tube is internally rifled for improved heat transfer.

Fins are coated with a non-stick acrylic film (hydrophilic) which provides additional corrosion protection and efficient surface water removal for improved performance.

The cooling coil is mounted over a full width stainless steel condensate tray.

Factory pressure tested to 40Bar.

Sweat copper pipe for brazed connection as standard.

General Description

STANDARD FEATURES

Chilled Water Coil
(CW Models)

Large surface area coil(s) ideally positioned to optimise airflow and heat transfer, manufactured from refrigeration quality copper tubes with mechanically bonded aluminium fins.

Fins are coated with a non-stick acrylic film (hydrophilic) which provides additional corrosion protection and efficient surface water removal for improved performance.

Coil headers are circuited to ensure low water pressure drops.

The cooling coil is mounted over a full width stainless steel condensate tray.

For control of water flow, a 3 port, raise/lower type, modulating mixing control valve is fitted as standard.

Maximum operating pressure 10Bar. Factory pressure tested to 20Bar.

Sweat copper pipe for brazed connection as standard. Optional threaded connections available refer to ***General Specification - Chilled Water Models***.

Fan & Motor Assembly - Standard

Sizes 9 - 19
(Direct Drive)

Units utilise a double inlet, forward curved, direct drive centrifugal fan with integral shaft mounted motor which is statically and dynamically balanced for quiet operation. Impellers and casings are galvanised for protection against corrosion. The integral motor runs in sealed for life, lubricated bearings and features automatic thermal overload protection.

Fan speed, airflow and external static pressure are controlled by the use of a voltage controller via the microprocessor display keypad which maintains optimum performance and offers easy on site adjustment.

Adjustable by increments of 0.1 VDC between 2 - 10 VDC.

Sizes 23 - 95
(Belt & Pulley)

Double inlet forward curved centrifugal fan(s) with galvanised impellers and casing.

Mild steel fan shaft with lifetime lubricated ball bearings.

Fan and drive assembly design is based on a minimum of 25,000 hours life expectancy.

Each fan assembly separately driven by a high efficiency air cooled motor through a pulley and ‘V’ belt drive. The complete motor assembly is mounted on a fully adjustable platform for belt tensioning. Motor specification conforms to IE2 (EFF1).

Fan motors up to 2.2kW use adjustable pitch pulleys on the motor with a fixed pitch pulley on the fan shaft, 3kW fan motors and above use fixed pitch pulleys to both the fan motor and fan shaft to vary air volumes.

Fan(s) from 4kW and above have twin belt drives and plummer block bearings.

General Description

STANDARD FEATURES

Airflow Switch

An adjustable differential pressure switch activates a visual alarm at the status panel and breaks the power supply in the event of a fan or motor failure.

Compressor
(X Models)

Compressor(s) are mounted on the base via the use of vibration isolators. Each compressor is designed for use with R407C refrigerant.

Sizes 9, 13, 19, 23D & 41D

Utilise hermetic scroll compressors fitted as standard with:

- Internal thermal motor protection

Sizes 16, 31 & 35

Utilise hermetic scroll compressors fitted as standard with:

- Internal thermal motor protection
- **ECA Approved**

Sizes 23, 25, 50D, 55D, 65D, 80D & 90D

Utilise hermetic scroll compressors fitted as standard with:

- Internal thermal motor protection
- Sight glass
- Internal thermal motor protection
- High discharge gas thermostat
- Oil sump heaters, to guard against refrigerant migration and to eliminate oil foaming on start-up

Refrigeration

Each refrigeration circuit features as standard:

A Models

- Externally equalised thermostatic expansion valve (TEV)
- Sight glass (loose)
- Filter drier (loose) (supplied with Airedale matched outdoor units)
- Holding charge of inert gas

X Models

- Externally equalised thermostatic expansion valve (TEV)
- Sight glass (loose)
- Filter drier (loose) (supplied with Airedale matched outdoor units)
- Low pressure switch - manual reset
- High pressure switch - manual reset
- Holding charge of inert gas

Filters

97mm pleated disposable panel filters in a rigid frame. Conform to BS EN 779-G4. Access and removal from unit front.

An adjustable diaphragm pressure switch is fitted across the filter assembly to monitor pressure drop, which will initiate a filter dirty alarm.

General Description

STANDARD FEATURES

Electrical

The control panel contains the necessary fan motor contactors and overloads, compressor starter (X type units) contactors, transformer, sub circuit protection, volt free contacts, mains and inter-connecting terminals. The panel is situated within the cabinet and is hinged for easy access to other components within the unit. The electrical control panels are wired to the latest European standards and codes of practice.

Main Electric Isolator

To ensure complete unit isolation of the electrical panel during adjustment and maintenance a door interlocking isolator is provided as standard.

Controls

Units are fitted with the AIRETronix microprocessor controller which offers powerful analogue and digital control to meet a wide range of monitoring and control features including a real time clock and a communication port plus networking and BMS connections.

A 4 x 20 character backlit LCD door mounted display keypad assembly is used to view the unit status and allow operator adjustment.

For further details, please refer to the ***Controls*** section.

Head Pressure Control - Stand Alone

Refer to the ***Outdoor Unit section, General Description***.

OPTIONAL EXTRAS - ENERGY SAVING

Electronic Expansion Valves (EEV)
(A & X Models)

Electronic expansion valves differ to the normal thermostatic expansion valves in their ability to maintain control of the suction superheat at reduced head pressures. This can lead to significant energy savings particularly at reduced loading and low ambient temperatures.

EEV step position, superheat setpoint, head pressure set point and other features can be viewed and adjusted via the microprocessor display keypad.

Factory fitted, for full details refer to ***Design Features & Information***.

CAUTION **As standard, the Intelligent Head Pressure Control option is included when the EEV option is selected.**

Head Pressure Control - Intelligent
(A & X Models)

As an alternative to the stand alone head pressure control fitted to the outdoor condensing unit or condenser, the system can be fitted with a voltage regulating fan speed controller which allows set point adjustment and system monitoring via the indoor unit AIRETronix microprocessor controller.

A pressure transducer is fitted to the liquid line which in turn feeds back the head pressure to the microprocessor. The condenser fan speed can then modulate via the controller to provide optimum control under varying ambient conditions. The head pressure can be monitored via the display keypad.

With the head pressure factory set to 14 Barg (203 psig) part load, EER values are significantly improved, which in turn lowers energy consumption.

General Description

OPTIONAL EXTRAS - GENERAL

Low Noise Feature for Condenser Fan
(A & X Models)

This feature is included as part of the Intelligent Head Pressure Control option, as detailed above and comes as standard when the EEV options is selected.

Specifically designed for night time operation as optimum low noise levels are achieved with reduced ambient temperature and room loads, this feature is also ideal for residential and other outdoor noise critical applications.

Initiated by setting the microprocessor programmable time clock, the head pressure set point changes from the standard 14 Barg (203 psig) to 22 Barg (319 psig), reducing the outdoor unit fan speed and corresponding operating sound levels.

Humidifier - Intelligent Modulation

Humidification is provided by an electrode boiler. The sealed humidifier design ensures that only clean sterile steam is supplied to the conditioned area and corrosive salts and minerals are held in the disposable bottle. The steam is distributed through a sparge pipe fitted to the coil assembly.

Featuring modulating capacity output control as standard, the system provides continuous modulation of steam output in response to a proportional control signal. The output control range is 20%-100% of the humidifier rated value and is designed to give an approximate steam output of +/- 3%, at the sensor, thus ensuring precise control of the conditioned space.

The cylinder operating life time is automatically optimised via the integrated water conductivity sensor, which combined with the AIRETronix controls monitors and regulates the water refill cycle to reduce excessive salt deposits and the progressive wear of the cylinder. For further details, refer to ***Design Features & Information***.

All humidifier parameters and alarms are accessible and adjustable via the microprocessor display keypad unit, main features include:

- Supply water conductivity (μS/cm)
- Actual steam output (kg/h)
- Required steam output (kg/h)
- Actual current rating (A)
- Required current rating (A)
- Status mode (Start Up, Running, Filling, Draining)

General Description

OPTIONAL EXTRAS - GENERAL

Water Conductivity & Cylinder Type

Conductivity is a measure of the ability of water to pass an electric current, measured in micro Siemens / centimetre (μS/cm). 3 different cylinders are available which correspond to the supply water conductivity.

Matching the correct cylinder type with the conductivity of the supply water ensures optimum performance and increases the life span of the cylinder.

1	Low Conductivity	(Soft Water)	- 100 to 350 μS/cm
2	Standard Conductivity	(Moderate/Hard Water)	- 350 to 750 μS/cm
3	High Conductivity	(Very Hard Water)	- 750 to 1250 μS/cm

As standard the humidifier is fitted with the standard conductivity cylinder which covers the majority of water supplies. Where the water conductivity is known, ***please specify at order***. For further details please contact Airedale.

Cleanable Humidifier Cylinder

The humidifier can be fitted with a take apart cylinder enabling the bottle and the electrodes to be cleaned and reused. The cylinder can typically be cleaned 3 times before replacing either the electrodes or the entire cylinder.

The cleanable humidifier cylinders are available in 8kg and 15kg bottle sizes with standard or high conductivity levels only. For further details please contact Airedale.

CAUTION **The supply water pressure to the humidifier assembly must be between 1 - 8 Barg.**

Heating Options

Electric Heating

Multi-stage finned electric heating elements complete with auto and manual reset overheat cut-out protection, phase balanced for increased efficiency.

or

Low Pressure Hot Water

A low pressure hot water coil constructed of refrigeration quality copper tube and mechanically bonded aluminium fins can be factory fitted.

Frost protection is fitted to prevent freezing of the low pressure hot water coil assembly.

Proportional heating control is provided by a factory fitted 3 port, raise/lower type, modulating valve.

General Description

OPTIONAL EXTRAS - GENERAL

High Efficiency & Pre Filters
(Except Sizes 35, 55, 90 & 95)

97mm, pleated disposable panel filters conforming to BS EN 779-F6. Protected by 22mm, disposable, synthetic type pre filters conforming to BS EN 779 G3.

To maintain design ESP, fan selection may alter with high efficiency filters, please refer to ***General Specification***.

Fan & Motor Assembly
(Sizes 9 - 19)

Where higher external static pressure is required units can be fitted with the traditional belt and pulley, separate fan and motor assembly.

Double inlet forward curved centrifugal fan(s) with galvanised impellers and casing.

Mild steel fan shaft with lifetime lubricated ball bearings.

Fan and drive assembly design is based on a minimum of 25,000 hours life expectancy.

Each fan is separately driven by a high efficiency air cooled motor through a pulley and 'V' belt drive. The complete motor assembly is mounted on a fully adjustable platform for belt tensioning. Motor specification conforms to Efficiency Class 2 (EFF1 (IE2)).

Fan motors up to 2.2kW use adjustable pitch pulleys on the motor with a fixed pitch pulley on the fan shaft, 3kW fan motors and above use fixed pitch pulleys to both the fan motor and fan shaft to vary air volumes.

Fan(s) from 4kW and above have twin belt drives and plummer block bearings.

Larger & Next Larger Fan Motor

Motor specification conforming to Efficiency Class 2. For applications where higher static air pressures are required, a larger motor size can be fitted to replace the standard motor.

High Efficiency Fan Motors

Belt and pulley fan and motor assemblies only.

High efficiency motors can be fitted that operate at lower running currents providing the benefit of lower running costs.

Conform to Efficiency Class 1 (EFF1) according to EN60034-2.

For technical data, please contact Airedale.

Higher External Static
(Sizes 9 - 55)

A higher external static can be achieved on standard configuration front return air models by replacing the louvred front grille with an egg crate type, for technical data please refer to Airedale.

General Description

OPTIONAL EXTRAS - GENERAL

Fan & Motor Anti Vibration Mounts

Spring type vibration isolators can be fitted between the fan and motor mounting plate and the unit chassis.

Condensate Pump

The condensate pump has a 6 litre reservoir with a capacity of 5 l/m at a head of 10.8m and is mounted in the unit base, for pump performance; refer to ***Design Features & Information***.

On units with optional base return air, the condensate pump is supplied loose and must be mounted in the floor void beneath the service connections.

Water Detector

2 methods are available:

1 A solid state (probe) sensor is supplied loose for remote mounting on site.
2 Tape suitable for sensing water droplets is supplied loose for remote mounting on site. Standard tape length 10m.

Firestat

Installed in the return air stream to shut down the unit in the event of an unusually high return air temperature.

Smoke Detector

Supplied loose for remote mounting to shut down the unit and activate the alarm upon sensing the presence of smoke.

Take Apart Structure

If required, units can be supplied in 2 pieces for sites where access is restricted, the overall height of the unit increases to 2040mm, refer to ***Dimensional & Installation Data*** in this section.

Return Air Configuration

Standard unit configuration is front return air, the following options are available, ***please specify at order***:

A, X & CW Models
(Sizes 9 - 95)

Rear return air.

A & CW Models
(Sizes 19 - 95)

Base return air.

Open & Enclosed Floorstand

Open or enclosed floorstands are available, complete with adjustable feet and floor tile lip. The height of the floor stand can be specified at the time of order.

General Description

OPTIONAL EXTRAS - GENERAL

Discharge Air Plenums

Constructed to match main cabinet design Light Grey (RAL 7035) available:

- Front only or 3 way discharge air
- Egg crate or double deflection grilles

Discharge Air Configuration

Standard configuration is top forward air discharge. Top reverse air discharge is available, ***please specify at order***.

Ceiling Duct Extension

Straight and 'L' shaped duct extensions up to a height of 1350mm constructed and finished to match the unit are available.

For extensions greater than 1350mm, please contact Airedale.

Height, ***please specify at order***.

Chilled Water Bypass Balancing Valves

Bypass balancing valves can be fitted to aid commissioning and unit operation by creating the same pressure drop through the bypass as through the chilled water coil.

2 Port Chilled Water Control Valve

For systems with variable speed pumps and water flow, a 2 port control valve can be fitted in place of the standard 3 port valve.

Threaded Connection
(CW Models)

BSP brass male taper threaded connections can be factory fitted.

Sub Fusing
(A & X Models)

The electrical mains supply for the system's outdoor unit(s) can be supplied via the indoor unit.

Alternative Refrigerant

For applications outside the EU, units can be supplied for use with R22, ***please specify at order***.

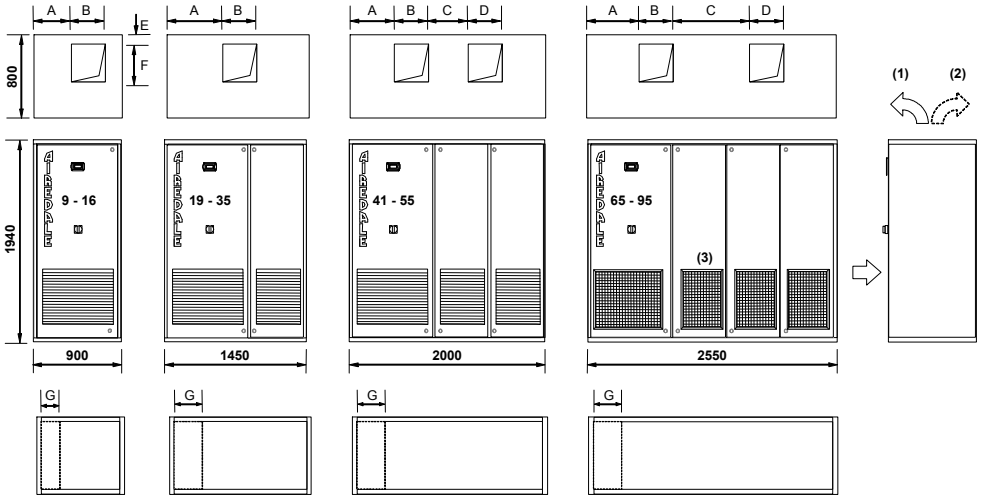
Export Packing

Units can be supplied packed inside a wooden crate or case to provide additional protection during transportation, (not required for container delivery).

Dimensional & Installation Data

DIMENSIONS

MODELS: A, X OR CW - STANDARD AIRFLOW CONFIGURATION (MM)



			H x D x W	A(4)	B(4)	C	D	E(4) & (5)	F(4)	G(6)	H
V 9 - 16	**A, X & CW**	mm	1940 x 800 x 900	282 (258)	337 (311)	-	-	112 (82)	295 (344)	180	900
V 19	**A, X & CW**	mm	1940 x 800 x 1450	282 (258)	401 (477)	-	-	112 (70)	348 (407)	280	1450
V 23 - 35	**A, X & CW**	mm	1940 x 800 x 1450	596 (N/A)	477 (N/A)	-	-	70 (N/A)	407 (N/A)	280	1450
V 41 - 55	**A, X & CW**	mm	1940 x 800 x 2000	478 (N/A)	377 (N/A)	350	377	82 (N/A)	407 (N/A)	280	2000
V 65 - 90	**A, X & CW**	mm	1940 x 800 x 2550	698 (N/A)	477 (N/A)	350	477	82 (N/A)	407 (N/A)	280	2550
V 95	**CW**	mm	1940 x 800 x 2550	698 (N/A)	477 (N/A)	350	477	82 (N/A)	407 (N/A)	280	2550

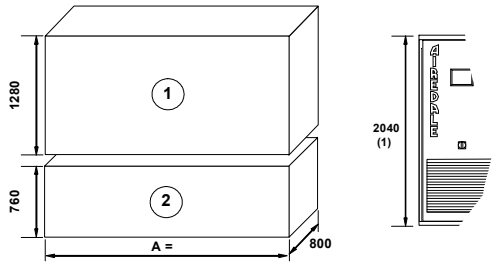
Unit diagrams can be supplied on request, please contact Airedale.

(1) Standard Forward Airflow Direction.
(2) Optional Reverse Airflow Direction.
(3) Models sizes 9 - 55 have louvred front return grilles and Models 65 - 95 have egg crate front return grilles as standard.
(4) Figures in brackets represent position of Fan Discharge Aperture when Larger Fan Motor Option is fitted.
(5) Dimension will vary with some optional extras, please refer to Airedale.
(6) Dimension represents the area in the base available for customer connections.

Dimensional & Installation Data

DIMENSIONS

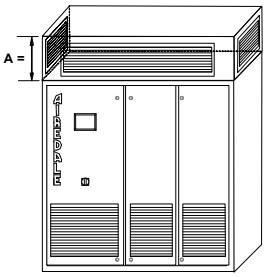
2 Way Optional Split Case (mm)



			A
V 9 - 16	**A, X & CW**	mm	900
V 19 - 25	**A, X & CW**	mm	1450
V 23 - 35	**AD, XD & CW**	mm	1450
V 41 - 55	**AD, XD & CW**	mm	2000
V 65 - 90	**AD, XD & CW**	mm	2550
V 95	**CW**	mm	2550

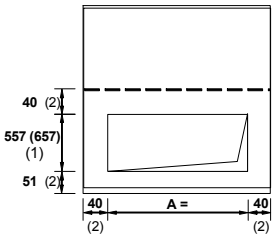
(1) Note additional height.
(2) Split case assembly/disassembly instructions supplied with unit.

Optional Discharge Air Plenum



			A
V 9 - 23	**A, X & CW**	mm	350
V 23 - 55	**AD, XD & CW**	mm	450
V 65 - 90	**AD, XD & CW**	mm	550
V 95	**CW**	mm	550

Optional Rear Return Air Aperture



			A
V 9 - 16	**A, X & CW**	mm	820
V 19 - 23	**A, X & CW**	mm	1370
V 23 - 35	**AD, XD & CW**	mm	1370
V 41 - 55	**AD, XD & CW**	mm	1920
V 65 - 90	**AD, XD & CW**	mm	2470
V 95	**CW**	mm	2470

(1) Figures in brackets represent split case optional dimensions only.
(2) Dimensions represent the usable area for duct flange attachment.

Dimensional & Installation Data

WEIGHTS

		1 PIECE DELIVERY	SPLIT DELIVERY		
		Total Machine	Total Machine	Split Module 1 (Fan/Coil Section)	Split Module 2 (Filter Section)
V9A	kg	266	286	205	81
V13A	kg	270	290	208	83
V16A	kg	276	297	212	84
V19A	kg	341	360	258	103
V23A	kg	356	376	269	107
V25A	kg	366	386	276	110
V23AD	kg	394	415	297	118
V31AD	kg	400	421	301	120
V35AD	kg	428	449	322	128
V41AD	kg	546	586	419	167
V45AD	kg	576	616	450	167
V50AD	kg	552	589	422	168
V55AD	kg	588	625	458	168
V65AD	kg	617	661	472	189
V80AD	kg	632	697	490	206
V90AD	kg	679	744	523	220
V9X	kg	286	290	176	114
V13X	kg	291	300	181	118
V16X	kg	296	305	185	120
V19X	kg	396	406	260	146
V23X	kg	451	477	306	171
V25X	kg	469	495	318	178
V23XD	kg	466	503	326	177
V31XD	kg	482	519	332	187
V35XD	kg	516	553	361	193
V41XD	kg	616	637	363	274
V45XD	kg	712	733	418	315
V50XD	kg	674	730	417	314
V55XD	kg	726	782	446	336
V65XD	kg	816	826	470	357
V80XD	kg	843	863	491	373
V90XD	kg	924	944	537	408
V9CW	kg	251	255	183	73
V13CW	kg	256	260	186	74
V16CW	kg	256	260	186	74
V19CW	kg	332	336	241	96
V23CW	kg	370	375	268	107
V25CW	kg	374	378	271	108
V31CW	kg	515	521	373	148
V35CW	kg	550	556	398	158
V41CW	kg	542	547	383	164
V45CW	kg	568	573	409	164
V50CW	kg	557	566	378	188
V55CW	kg	576	585	397	188
V65CW	kg	635	644	460	184
V80CW	kg	659	673	473	199
V90CW	kg	686	699	492	207
V95CW	kg	704	717	505	213

OPTIONAL PLENUM

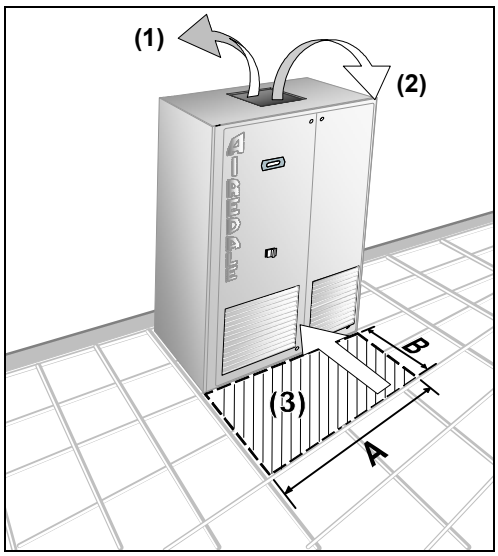
			Total Plenum Weight
V 9 - 16	**A, X & CW**	kg	26
V 19 - 25	**A, X & CW**	kg	36
V 23 - 35	**AD, XD & CW**	kg	41
V 41 - 55	**AD, XD & CW**	kg	52
V 65 - 90	**AD, XD & CW**	kg	70
V 95	**CW**		70

Dimensional & Installation Data

POSITIONING

Models A, X & CW

Standard Front Return

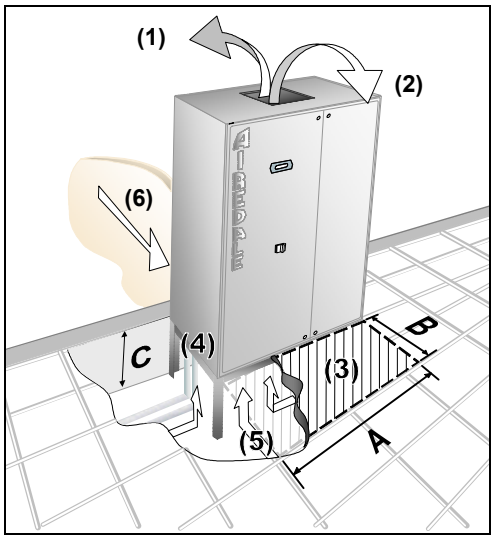


The unit is designed for use with either ducted discharge or a plenum.

If neither is used, protection from rotating parts in the form of a grille must be used on the discharge air outlet.

Placing objects near an unguarded fan may cause injury.

Optional Base or Rear Return



			A	B	C - FLOORSTAND(7)
V 9 - 16	**A, X & CW**	mm	900	900	
V 19 - 35	**A, X & CW**	mm	1450	900	Min 350
V 41 - 55	**A, X & CW**	mm	2000	900	(+ 50mm Feet
V 65 - 90	**A, X & CW**	mm	2550	900	Adjustable +/- 20mm)
V 95	**CW**	mm	2550	900	

(1) Reversed discharge air.
(2) Forward discharge air.
(3) Shaded area indicates minimum service and maintenance requirements
(4) Shown with optional open floor stand.
(5) Optional base return.
(6) Optional rear return.
(7) Dimension C denotes recommended minimum floorstand height, refer to Airedale for special applications.

AIRETronix Controls

GENERAL

As standard the units are supplied with an AIRETronix microprocessor controller connected to a 4x20 back-lit LCD display keypad.

The AIRETronix microprocessor controller can be linked together locally to provide run/standby operation. Windows based supervisor software is also available for local or remote networking. This modular approach provides great flexibility while at the same time reducing installation and maintenance costs.

A real time clock card is fitted as standard to provide date and time stamping on alarms.

The display keypad features a simple array of keys to navigate through the in built menus.

TEMPERATURE CONTROL

A combined temperature and humidity sensor is mounted in the return air with an option for remote mounting within the conditioned space.

The temperature sensor is a NTC type thermistor accurate up to +/- 0.25°C and the humidity sensor accurate to +/- 3%.

The Airedale microprocessor senses the Return Air conditions and maintains the Return air Temperature and Humidity conditions by controlling cooling, heating, humidification and dehumidification outputs accordingly. The supply air temperature is monitored by the controller providing an option of Supply Air temperature limiting.

The microprocessor monitors and displays the following values:

MONITORING

- Return Air Temperature
- Return Air Humidity
- Supply Air Temperature
- Condensing Pressure (Optional on [DX] units only)
- Glycol Temperature (Glycol free cooling units only)
- Chilled Water Flow Temperature (Chilled Water units only)
- Chilled Water Return Temperature (Chilled Water units only)

ALARM HANDLING

An Visual alarm will be generated under the following conditions:

- Return air temperature high limit
- Return air temperature low limit
- Return air humidity high limit
- Return air humidity low limit
- Supply air temperature high limit
- Supply air temperature low limit
- Glycol temperature low limit (DX free cooling units only)
- Frost protection low limit (LPHW option only)
- Airflow failure
- Compressor failure (DX units only)
- Low pressure trip (DX units only)
- Electric Heating Overheat cut-out
- Filter change alarm
- Manual override
- Fire/smoke alarm
- Water Flood
- Power fail reset
- Communications failure
- Humidifier alarm (low production, no water supply etc)
- Maintenance - fan and compressor (once hours run limit exceeded)

ALARM LOG

The controller logs and allows viewing of the last 100 conditions recorded in descending chronological order through the keypad display

AIRETronix Controls

STANDARD FEATURES

User Friendly Display Keypad

The default screen shows the unit status and room condition (°C/RH %) without the need for interrogation and an easy to navigate menu structure for further interrogation and adjustment.

Password Protection

The control system integrity can be maintained by restricting access with a password PIN number.

CAUTION **IMPORTANT: To change the PIN number; please contact Airedale at time of order with the preferred 4 digit number.**

Remote On/Off

Terminals for interlocking are provided to enable or disable the unit remotely.

Fire Shut Down

Terminals for interlocking are provided to shut down the unit in the event of fire.

Compressor Anti-Cycle Control

Programmed to provide automatic anti-cycling delays of up to 10 starts per hour with a minimum off time of 3 minutes.

Compressor Rotation

On dual and triple circuit units the controller is programmed to provide automatic compressor rotation to ensure equal compressor running times. In the event of a compressor fault the controller is programmed to automatically select the next compressor in order of running hours.

Compressor Hours Run Log & Reset

Allows the user to monitor the running times of each compressor and reset after maintenance.

Evaporator Fan Hours Run Log & Reset

Allows the user to monitor the running times of the evaporator fans and reset after maintenance.

Networking

A Local Area Network (AIRELan) can be used to connect upto 6 units to offer intercommunication and Duty/Standby control. This also allows the connection of computers, printers and modems on the same communications ring. For further details, please contact Airedale Controls.

CAUTION **When adding to an existing network, please consult Airedale to ensure strategy compatibility.**

AIRETronix Controls

STANDARD FEATURES

Duty/Standby Operation
The controller enables units to operate in run/standby mode, with up to 6 units networked together, without the need for additional hardware or controllers. Standby units can be configured to start when the run unit has a critical alarm and/or a high/low return air temperature alarm.

Duty Rotation
(Network Units)
Networked units can be configured to duty rotate, providing equal hours run of fans and compressors.

Head Pressure Control and Condenser Fan Speed Controller
Each refrigerant circuit is fitted with condenser pressure transducers and a modulating condenser fan speed controller to allow the designed head pressure to be monitored and maintained under varying ambient conditions. Condenser fan speed control settings are adjustable via the display keypad.

As standard, the Intelligent Head Pressure Control option is included when the EEV option is selected.

Chilled Water Temperature Monitoring
NTC type thermistors are provided to monitor the chilled water entering and leaving temperatures.

Evaporator Fan Speed Controller
(Sizes 9 - 19)
Evaporator fan speed control is easily set via the display keypad and can be incrementally increased or decreased to meet on site airflow requirements.

Occupied / Unoccupied Set Points
Occupied and unoccupied set points are provided for temperature, humidity and head pressure control settings.

OPTIONAL EXTRAS

LPHW Frost Protection (DX units with LPHW option)
The frost protection thermostat provided, is mounted between the DX and LPHW coils and has a fixed 3°C setting to disable DX cooling.

BMS Interface Card
Enables AIRETronix Controlled units to be interfaced with most BMS, factory fitted, please contact Airedale.

A wide range of protocols can be accommodated through the use of interface devices. Available as a standard option are: ModBus/Jbus, Carel and Trend.

For interfaces such as SNMP, LonWorks, Metasys and BACnet, please contact Airedale.

Also available is Airedale's own supervisory plug-in BMS card pCOWEB.

Based on Ethernet TCP/IP secure technology with SNMP features.,

Requires no proprietary cabling or monitoring software and supplied pre programmed with an IP address for ease of set up.

GSM Modem Kit
Allows remote alarm monitoring by sending alarm text messages to a nominated mobile phone, factory set.

Sound Measurement Method

MEASUREMENT OF SOUND DATA

All sound data quoted has been measured in the third-octave band limited values, using a Real Time Analyser calibrated sound intensity meter in accordance with BS EN ISO9614 Part 1 : 1995.

All Sound Power Levels quoted are calculated from measured sound intensity according to BS EN ISO9614 Part 1 : 1995.

SEMI HEMISPHERICAL

Sound Pressure Levels are calculated from sound power using the semi-hemispherical method where the noise source is in junction with 2 boundaries i.e. the floor and 1 wall.

FREE FIELD

For comparison, the semi hemispherical figures can typically be reduced by 3dB to provide free field conditions.

IMPORTANT

The sound data quoted is based on the unit having return air application with ducted discharge air.

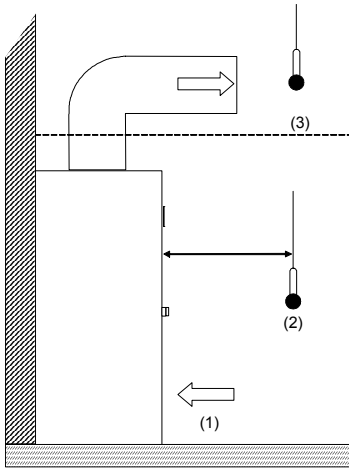
Case breakout sound data is therefore independent of the discharge air sound data.

For non-ducted discharge air applications, the overall case breakout sound levels may increase, due to the discharge sound being predominant.

Within the conditioned space, sound from in-room ducted discharge air grilles and other equipment will contribute to the overall sound level and should therefore be considered as part of sound calculations.

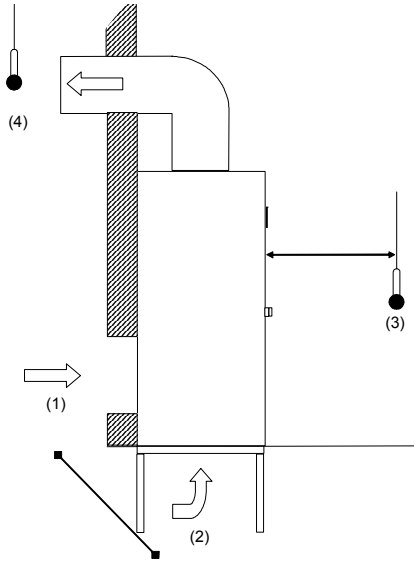
Specialist acoustic advice is recommended for noise critical applications.

Front Return Air Configuration



(1) Return Air
(2) Case Breakout & Front Return Air
(3) Discharge Air

Rear / Base Return Air Configuration (Optional)



(1) Return Air Option or
(2) Base Return Air Option
(2) Case Breakout
(4) Discharge Air

Design Features & Information

ELECTRONIC EXPANSION VALVES (EEV)

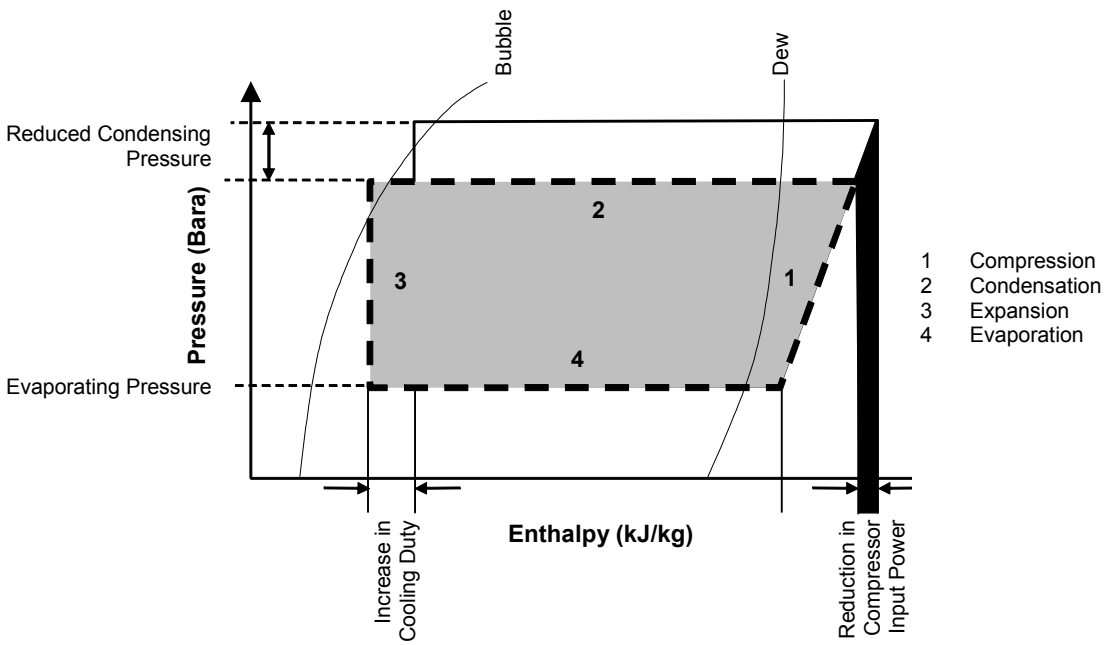
Thermostatic Expansion Valves (TEV)

Whilst offering versatile control at the full design duty of the unit, TEVs do not automatically optimise themselves to all operating conditions. Therefore, if the refrigeration system is operating at 40% or 50% of full load, especially at a lower ambient temperature than that for which the valve was sized, the conventional TEV must have the design head pressure available to ensure good refrigerant control. Maintaining an artificially high condensing pressure is normal in conventional systems.

Electronic Expansion Valves (EEV)

Using an EEV allows for good refrigeration control whilst operating at part load and lower ambient conditions with a reduced condensing pressure. By fitting an EEV and adjusting the head pressure control setting **an increase in the system EER (Energy Efficiency Ratio) of up to 30% can typically be seen.** The Mollier diagram shown below helps to illustrate how this increase in efficiency is achieved.

EEV's differ to normal thermostatic expansion valves in their ability to maintain control of refrigerant flow and the suction superheat at reduced head pressures. The turn-down rate of a typical EEV is superior to that of it's thermostatic equivalent, such that a reduced optimum condensing pressure can be maintained at low compressor load. However low the load is on the compressor, from zero to 100%, there will not be a problem with turn down, even down to 10% of the valves rated capacity.



Key

Cooling Cycle @ 22°C ambient with a conventional TEV fitted.

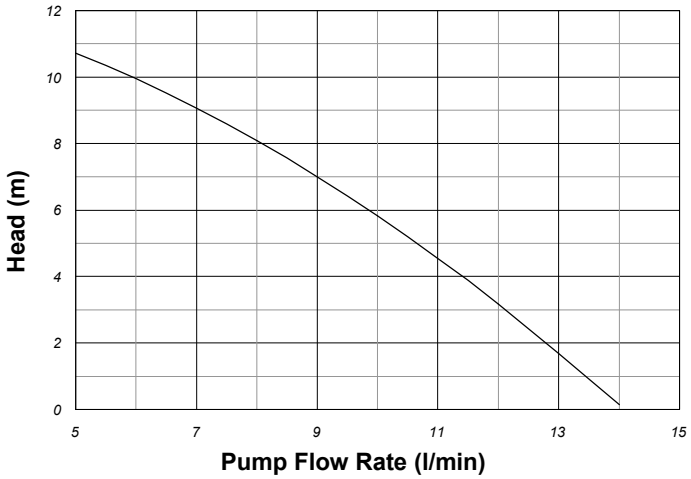
Cooling cycle @ 22°C ambient, demonstrating a typical EEV condensing temperature taking full advantage of lower ambient air temperatures (below 35°C).

Design Features & Information

CONDENSATE PUMP (OPTIONAL EXTRA)

Performance

The following illustrates the TOTAL static (head) pressure available. The system horizontal pipe losses and vertical lift should be factored in when calculating the condensate pump performance.



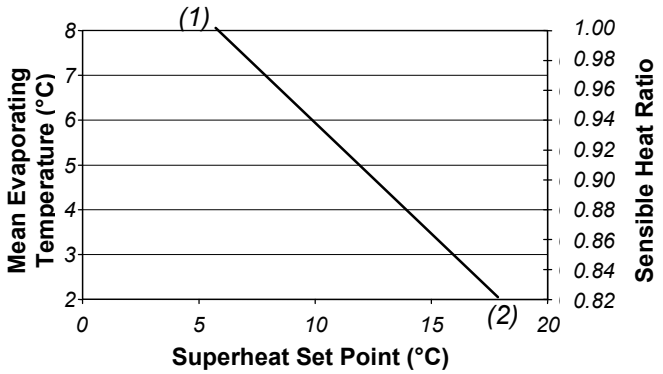
Design Features & Information

RAPID DE-HUMIDIFICATION
(Only available with Electronic Expansion Valves (EEV))

Controlled by the AIRETronix microprocessor, electronic expansion valves are unlike their conventional thermostatic counterparts in that they can modulate independently of the suction line temperature. This unique feature allows the AIRETronix controller to raise the superheat set-point, in turn dropping the evaporating temperature to a point at which considerable de-humidification takes place.

This increase in the de-humidification rate means that time taken to reduce the room humidity to the required level is drastically decreased, along with the energy required to do so. The graph below shows the typical effect that the superheat set-point has on the evaporating temperature and sensible heat ratio.

Effect of Superheat on Evaporating Temperature and SHR



(1) Normal Operating Conditions
(2) Rapid De-hum Condition

Design Features & Information

HUMIDIFICATION

Control Principles

In a humidifier with electrodes, steam is produced by passing a current between electrode plates to generate heat. The higher the current being passed between the electrodes, the greater the quantity of steam that is produced.

To modulate the rate of steam production, this system varies the level of water within the cylinder, thereby increasing the immersion level of the electrodes and the current being passed between them. The more conducting area that is available to pass current between the electrodes, the larger the amount of steam that is produced.

Modulated by the AIRETronix controller, the water level is varied so that the level of steam being produced ensures that the room humidity set-point is continually maintained within a tight tolerance.

Optimised Lifetime

The life span of the Airedale humidification system is optimised by the inclusion of a water conductivity sensor into the bottle feed. This sensor determines the conductivity level of the supply water and by using an algorithm embedded in the AIRETronix software, determines the frequency that the bottle should be drained.

EXAMPLE: (Optimised Lifetime with High Water Conductivity Supply)

As liquid water is boiled off into steam, mineral deposits are left in solution increasing the conductivity of the water. To counter this, the intelligent software increases the frequency of drain meaning that the replenishing supply water keeps the concentration of minerals diluted. By maintaining an acceptable mineral concentration, the bottle life span is maximised.

Performance Data - Air Cooled Models

COOLING DUTIES

A Models

Cooling Capacity (1)		Ambient							
	Air On °C DB /%RH	25°C		30°C		35°C		40°C	
		TC (kW)	SC (kW)	TC (kW)	SC (kW)	TC (kW)	SC (kW)	TC (kW)	SC (kW)
V9A / CUS3	22 / 50	9.0	8.1	8.6	7.9	8.2	7.6	7.8	7.3
	24 / 45	9.2	8.7	8.8	8.4	8.4	8.1	8.1	7.8
	26 / 40	9.5	9.2	9.1	8.9	8.7	8.6	8.3	8.2
V13A / CUS4	22 / 50	11.5	10.5	11.0	10.2	10.5	9.9	10.0	9.5
	24 / 45	12.0	11.4	11.4	11.0	10.9	10.6	10.4	10.1
	26 / 40	12.3	12.1	11.8	11.7	11.2	11.2	10.7	10.7
V16A / CUS5	22 / 50	14.0	12.9	13.4	12.6	12.9	12.2	12.3	11.8
	24 / 45	14.4	13.9	13.9	13.5	13.4	13.0	12.8	12.6
	26 / 40	15.0	14.7	14.4	14.3	13.9	13.8	13.3	13.3
V19A / CUS6	22 / 50	17.6	14.7	16.9	14.4	16.2	14.1	15.4	13.8
	24 / 45	18.0	16.0	17.3	15.7	16.6	15.3	15.9	14.8
	26 / 40	18.6	17.3	17.9	16.9	17.2	16.4	16.4	15.9
V23A / CUS7.5	22 / 50	20.8	19.7	20.0	19.2	19.2	18.6	18.4	17.9
	24 / 45	21.7	21.1	20.9	20.5	20.0	19.9	19.2	19.2
	26 / 40	22.5	22.4	21.7	21.6	20.8	20.8	19.9	19.9
V25A / CUS8.5	22 / 50	26.1	23.8	25.2	23.3	24.3	22.7	23.4	22.1
	24 / 45	27.1	25.6	26.1	25.0	25.2	24.3	24.2	23.6
	26 / 40	28.1	27.4	27.2	26.6	26.2	25.9	25.3	25.1
V23AD / CUS4 x 2	22 / 50	21.7	20.6	20.7	20.0	19.8	19.2	18.8	18.4
	24 / 45	22.5	22.0	21.5	21.2	20.5	20.4	19.5	19.6
	26 / 40	23.3	23.3	22.4	22.4	21.4	21.4	20.3	20.3
V31AD / CUS5 x 2	22 / 50	26.2	25.2	25.2	24.4	24.2	23.6	23.2	22.7
	24 / 45	27.4	26.9	26.4	26.1	25.4	25.2	24.3	24.2
	26 / 40	28.6	28.6	27.6	27.6	26.6	26.6	25.6	25.6
V35AD / CUS5.5 x 2	22 / 50	28.9	27.9	27.9	27.0	26.8	26.1	25.6	25.1
	24 / 45	30.3	29.7	29.2	28.8	28.0	27.8	26.8	26.7
	26 / 40	31.4	31.4	30.4	30.4	29.4	29.4	28.4	28.4
V41AD/ CUS6 x 2	22 / 50	39.6	37.5	37.0	35.5	34.5	33.4	32.1	31.4
	24 / 45	41.1	40.1	38.5	38.0	36.0	35.7	33.5	33.5
	26 / 40	42.5	42.3	39.9	39.9	37.3	37.3	34.8	34.8
V45AD / CUS6.5 x 2	22 / 50	42.4	40.2	39.8	38.1	37.3	36.0	34.7	33.8
	24 / 45	44.1	42.9	41.4	40.6	38.8	38.3	36.2	36.0
	26 / 40	45.8	45.4	43.1	42.9	40.4	40.4	37.7	37.7
V50AD / CUS7.5 x 2	22 / 50	42.3	40.9	39.6	38.7	37.1	36.4	34.6	34.2
	24 / 45	44.2	43.8	41.6	41.4	38.9	38.9	36.3	36.3
	26 / 40	46.2	46.2	43.5	43.5	40.8	40.8	38.2	38.2
V55AD / CUS8.5 x 2	22 / 50	51.5	48.7	48.6	46.3	45.7	44.0	42.9	41.6
	24 / 45	53.9	52.5	50.9	49.8	48.0	47.1	45.1	44.4
	26 / 40	56.3	56.1	53.2	53.2	50.2	50.2	47.2	47.2
V65AD / CUS10 x 2	22 / 50	58.7	55.6	55.0	52.6	51.4	49.8	47.9	46.9
	24 / 45	60.9	59.6	57.1	56.4	53.4	53.1	49.7	49.8
	26 / 40	63.2	63.2	59.4	59.4	55.7	55.7	52.2	52.2
V80AD / CUS12 x 2	22 / 50	72.8	68.2	68.4	64.8	64.1	61.3	59.9	57.8
	24 / 45	75.4	72.9	70.9	69.1	66.6	65.4	62.3	61.6
	26 / 40	78.5	77.6	73.9	73.5	69.4	69.4	65.0	65.0
V90AD / CUS30D	22 / 50	88.7	80.5	83.3	76.7	78.0	72.9	72.9	69.0
	24 / 45	91.8	87.0	86.3	82.6	80.8	78.1	75.4	73.6
	26 / 40	94.9	92.6	89.3	87.8	83.7	82.9	78.2	77.9

TC = Total Cooling SC = Sensible Cooling

(1) Deduct fan motor gain for nett duties, refer to ***General Specification - Air Cooled Models***.

Performance Data - Air Cooled Models

COOLING DUTIES

X Models

Cooling Capacity (1)	Air On °C DB /%RH	Ambient							
		25°C		30°C		35°C		40°C	
		TC (kW)	SC (kW)	TC (kW)	SC (kW)	TC (kW)	SC (kW)	TC (kW)	SC (kW)
V9X / C11	22 / 50	9.2	8.2	8.8	8.0	8.4	7.8	8.0	7.5
	24 / 45	9.4	8.8	9.1	8.6	8.7	8.3	8.3	8.0
	26 / 40	9.8	9.4	9.4	9.1	9.0	8.8	8.6	8.5
V13X / C15	22 / 50	11.5	10.5	11.0	10.2	10.5	9.9	10.1	9.6
	24 / 45	12.0	11.4	11.5	11.1	11.0	10.6	10.4	10.2
	26 / 40	12.3	12.1	11.8	11.7	11.3	11.3	10.8	10.8
V16X / C20	22 / 50	13.9	12.9	13.4	12.6	12.9	12.2	12.3	11.8
	24 / 45	14.4	13.8	13.9	13.5	13.4	13.0	12.8	12.6
	26 / 40	15.0	14.7	14.4	14.3	13.9	13.8	13.3	13.3
V19X / C25	22 / 50	19.5	15.1	18.8	14.8	18.1	14.5	17.3	14.2
	24 / 45	20.1	16.5	19.3	16.2	18.5	15.9	17.8	15.5
	26 / 40	20.6	18.0	19.9	17.7	19.1	17.2	18.4	16.9
V23X / C35	22 / 50	22.6	21.1	21.8	20.5	21.0	20.0	20.1	19.3
	24 / 45	23.5	22.7	22.7	22.0	21.8	21.4	21.0	20.7
	26 / 40	24.4	24.0	23.6	23.4	22.7	22.6	21.8	21.8
V25X / C45	22 / 50	27.8	24.9	26.9	24.4	26.0	23.9	25.0	23.3
	24 / 45	28.8	27.0	27.9	26.4	26.9	25.7	25.9	25.0
	26 / 40	29.9	28.9	28.9	28.2	28.0	27.4	27.0	26.6
V23XD / C15 x 2	22 / 50	21.8	20.7	20.9	20.1	19.9	19.4	19.0	18.6
	24 / 45	22.6	22.1	21.7	21.4	20.7	20.6	19.8	19.8
	26 / 40	23.5	23.4	22.5	22.6	21.6	21.6	20.6	20.6
V31XD / C20 x 2	22 / 50	26.1	25.2	25.2	24.4	24.2	23.6	23.2	22.8
	24 / 45	27.4	26.9	26.4	26.1	25.4	25.2	24.4	24.3
	26 / 40	28.6	28.6	27.7	27.7	26.7	26.7	25.7	25.7
V35XD / C25 x 2	22 / 50	29.4	28.2	28.3	27.4	27.3	26.5	26.1	25.6
	24 / 45	30.8	30.2	29.7	29.2	28.6	28.3	27.4	27.2
	26 / 40	31.9	31.9	31.0	31.0	30.0	30.0	29.0	29.0
V41XD / C25 x 2	22 / 50	41.8	38.3	39.2	36.4	36.7	34.5	34.2	32.6
	24 / 45	43.3	41.4	40.7	39.2	38.1	37.1	35.6	34.9
	26 / 40	44.8	43.8	42.1	41.5	39.5	39.2	37.0	36.9
V45XD / C35 x 2	22 / 50	44.2	40.7	41.7	38.8	39.2	36.9	36.7	34.9
	24 / 45	46.0	43.9	43.4	41.7	40.8	39.5	38.2	37.3
	26 / 40	47.7	46.7	45.1	44.3	42.4	41.8	39.8	39.5
V50XD / C35 x 2	22 / 50	44.4	42.1	41.7	39.9	39.1	37.7	36.6	35.6
	24 / 45	46.3	45.1	43.7	42.7	41.0	40.4	38.4	38.1
	26 / 40	48.2	48.2	45.5	45.5	42.8	42.8	40.3	40.3
V55XD / C45 x 2	22 / 50	52.5	48.6	49.6	46.4	46.8	44.2	44.0	42.0
	24 / 45	54.9	52.7	52.0	50.2	49.1	47.7	46.2	45.1
	26 / 40	57.1	56.1	54.2	53.5	51.3	51.0	48.3	48.3
V65XD / C45 x 2	22 / 50	58.6	55.6	55.0	52.6	51.5	49.8	47.8	46.8
	24 / 45	60.9	59.6	57.1	56.4	53.5	53.2	49.7	49.7
	26 / 40	63.2	63.2	59.5	59.5	55.8	55.8	52.1	52.1
V80XD / C45 x 2	22 / 50	72.9	68.2	68.6	64.9	64.4	61.5	59.5	57.4
	24 / 45	75.5	73.0	71.2	69.2	66.9	65.6	61.8	61.3
	26 / 40	78.6	77.8	74.2	73.8	69.8	69.7	64.5	64.5
V90XD / CS50 x 2	22 / 50	89.2	80.8	84.0	77.0	78.7	73.3	73.6	69.5
	24 / 45	92.4	87.4	86.9	83.1	81.5	78.6	76.2	74.2
	26 / 40	95.5	93.1	90.0	88.3	84.5	83.5	79.0	78.6

TC = Total Cooling SC = Sensible Cooling

(1) Deduct fan motor gain for nett duties, refer to ***General Specification - Air Cooled Models***.

OPERATING LIMITS

Cooling	
Indoor Air Temperature	+18°C to +26°C
Indoor RH%	+40% to +50%
Outdoor Temperature	-20°C to +40°C

General Specification - Air Cooled Models

MECHANICAL DATA

Single Circuit			V9A / V9X	V13A / V13X	V16A / V16X
A Model - Matched Condensing Unit			**CUS3**	**CUS4**	**CUS5**
X Model - Matched Condenser			**C11**	**C15**	**C20**
Capacity					
Nom Cooling (Gross) - A	(1)	kW	8.4	10.9	13.4
Nom Cooling (Gross) - X	(1)	kW	8.7	11.0	13.4
Capacity Steps			1	1	1
Fan Gain		kW	1 x 0.35	1 x 0.35	1 x 0.35
Dimensions - H x D x W	(2)	mm	1940 x 800 x 900	1940 x 800 x 900	1940 x 800 x 900
Weight - Machine - A	(2)	kg	266	270	276
Weight - Machine - X	(2)	kg	286	291	296
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)		
Evaporator			Rifled Copper Tube/Turbulated Aluminium Fins		
Coating			Plain	Plain	Plan
Cooling/Dehum Stages			1/1	1/1	1/1
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP		
Motor / Filter Type			Direct / Standard	Direct / Standard	Direct / Standard
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60
Speed @ 50Pa ESP		rpm	N/A	N/A	N/A
Maximum ESP		Pa	425	330	200
Speed @ Maximum ESP		rpm	N/A	N/A	N/A
Nominal Airflow		m³/s	0.65	0.87	1.09
Compressor - X			Single - Scroll / Polyol Ester Oil	Single - Scroll / Polyolvinyl Oil	Single - Scroll / Polyol Ester Oil
Quantity			1	1	1
Oil Charge Volume (Total)		l	1.10	1.85	1.85
Refrigeration			Single Circuit		
Refrigeration Control			Thermostatic Expansion Valve (Optional EEV)		
Refrigeration Type	(4)		R407C (Optional R22)		
Holding Charge			Inert Gas		
Connections					
Liquid (Sweat) - A & X		in	1/2	1/2	1/2
Suction (Sweat) - A		in	3/4	7/8	7/8
Discharge (Sweat) - X		in	1/2	1/2	5/8
Condensate Drain Hose		mm	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm		
Quantity			2	2	2
OPTIONAL EXTRAS					
Electric Heating		kW	7.5	15.0	15.0
Humidifier		kg/hr	0.6 - 3.0	0.6 - 3.0	0.6 - 3.0
Feed/Drain			3/4" BSPF Braided flexible hose / 19mm hose connection		
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm		
Quantity			2 + 2	2 + 2	2 + 2
HE & Pre Filter Motor Selection					
Motor / Filter Type			Direct / HE	Direct / HE	Direct / HE
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60
Speed @ 50Pa ESP		rpm	N/A	N/A	N/A
Maximum ESP		Pa	385	240	30
Speed @ Maximum ESP		rpm	N/A	N/A	N/A
Fan Gain		kW	1 x 0.35	1 x 0.35	1 x 0.35
Larger Fan Motor Size	(3)				
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 0.75	1 x 0.75	1 x 1.10
Maximum ESP		Pa	545	425	420
Speed @ Maximum ESP		rpm	1257	1178	1262
Fan Gain		kW	1 x 0.44	1 x 0.44	1 x 0.65
Next Larger Fan Motor Size	(3)	kW			
Motor / Filter Type			N/A	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	N/A	1 x 1.10	1 x 1.50
Maximum ESP		Pa	N/A	645	650
Speed @ Maximum ESP		rpm	N/A	1410	1491
Fan Gain		kW	N/A	1 x 0.65	1 x 0.88
Condensate Pump					
Head		m	10.8	10.8	10.8
Flow		l/m	5	5	5
Drain			10mm S/Steel Stub Connection		
Low Pressure Hot Water			Copper Tube/Aluminium Fin		
Capacity Gross	(5)	kW	11	13	15
Water Flow (Nominal)		l/s	0.25	0.29	0.34
LPHW Connection Sizes		mm	22	22	22

(1) Entering air 24°C/45% RH ambient 35°C.
(2) Refer to *Dimensional & Installation Data* Split case information.
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) For refrigerant charges, refer to ***Design Data - Air Cooled Models***.
(5) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Air Cooled Models***.

General Specification - Air Cooled Models

MECHANICAL DATA

Single Circuit

			V19A V19X	V23A V23X	V25A V25X
A Model - Matched Condensing Unit			**CUS6**	**CUS7.5**	**CUS8.5**
X Model - Matched Condenser			**C25**	**C35**	**C45**
Capacity					
Nom Cooling (Gross) - A	(1)	kW	16.6	20.0	25.2
Nom Cooling (Gross) - X	(1)	kW	18.5	21.8	26.9
Capacity Steps			1	1	1
Fan Gain		kW	1 x 0.44	1 x 0.88	1 x 1.29
Dimensions - H x D x W	(2)	mm	1940 x 800 x 1450	1940 x 800 x 1450	1940 x 800 x 1450
Weight - Machine - A	(2)	kg	341	356	366
Weight - Machine - X	(2)	kg	396	451	469
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)		
Evaporator			Rifled Copper Tube/Turbulated Aluminium Fins		
Coating			Plain	Plain	Hydrophilic
Cooling/Dehum Stages			1/1	1/1	1/1
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP		
Motor / Filter Type			Direct / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 0.74	1 x 1.5	1 x 2.2
Speed @ 50Pa ESP		rpm	N/A	790	872
Maximum ESP		Pa	50	180	260
Speed @ Maximum ESP		rpm	N/A	932	1079
Nominal Airflow		m³/s	1.50	1.9	2.1
Compressor - X			Single - Scroll / Polyol Ester Oil		
Quantity			1	1	1
Oil Charge Volume (Total)		l	1.65	3.25	3.80
Refrigeration			Single Circuit		
Refrigeration Control			Thermostatic Expansion Valve (Optional EEV)		
Refrigeration Type	(4)		R407C (Optional R22)		
Holding Charge			Inert Gas		
Connections					
Liquid (Sweat) - A & X		in	5/8	5/8	5/8
Suction (Sweat) - A		in	7/8	1 1/8	1 1/8
Discharge (Sweat) - X		in	3/4	3/4	7/8
Condensate Drain Hose		mm	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm		
Quantity			3	3	3
OPTIONAL EXTRAS					
Electric Heating		kW	15.0	15.0	15.0
Humidifier		kg/hr	1.6 - 8.0	1.6 - 8.0	1.6 - 8.0
Feed/Drain			3/4" BSPF Braided flexible hose / 19mm hose connection		
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm		
Quantity			3 + 3	3 + 3	3 + 3
HE & Pre Filter Motor Selection					
Motor / Filter Type			Belt / HE	Belt / HE	Belt / HE
Quantity / Motor Size		kW	1 x 1.10	1 x 1.50	1 x 2.20
Speed @ 50Pa ESP		rpm	575	898	997
Maximum ESP		Pa	175	80	140
Speed @ Maximum ESP		rpm	826	930	1082
Fan Gain		kW	1 x 0.65	1 x 0.88	1 x 1.29
Larger Fan Motor Size	(3)				
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 1.10	1 x 2.20	1 x 3.00
Maximum ESP		Pa	205	395	475
Speed @ Maximum ESP		rpm	865	1143	1265
Fan Gain		kW	1 x 0.65	1 x 1.29	1 x1.76
Next Larger Fan Motor Size	(3)				
Motor / Filter Type			Belt / Standard	Belt / Standard	N/A
Quantity / Motor Size		kW	1 x 1.50	1 x 3.00	N/A
Maximum ESP		Pa	380	560	N/A
Speed @ Maximum ESP		rpm	1022	1284	N/A
Fan Gain		kW	1 x 0.88	1 x 1.76	N/A
Condensate Pump					
Head		m	10.8	10.8	10.8
Flow		l/m	5	5	5
Drain			10mm S/Steel Stub Connection		
Low Pressure Hot Water			Copper Tube/Aluminium Fin		
Capacity Gross	(5)	kW	20	23	24
Water Flow (Nominal)		l/s	0.43	0.50	0.52
LPHW Connection Sizes		mm	22	22	22

(1) Entering air 24°C/45% RH ambient 35°C.
(2) Refer to *Dimensional & Installation Data* Split case information.
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) For refrigerant charges, refer to ***Design Data - Air Cooled Models***.
(5) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Air Cooled Models***.

General Specification - Air Cooled Models

MECHANICAL DATA

Dual Circuit			V23AD V23XD	V31AD V31XD	V35AD V35XD	V41AD V41XD	V45AD V45XD
A Model - Matched Condensing Unit			**CUS4 x 2**	**CUS5 x 2**	**CUS5.5 x 2**	**CUS6 x 2**	**CUS6.5 x 2**
X Model - Matched Condenser			**C15 x 2**	**C20 x 2**	**C25 x 2**	**C25 x 2**	**C35 x 2**
Capacity							
Nom Cooling (Gross) - A	(1)	kW	20.5	25.4	28.0	36.0	38.8
Nom Cooling (Gross) - X	(1)	kW	20.7	25.4	28.6	38.1	40.8
Capacity Steps			2	2	2	2	2
Fan Gain		kW	1 x 0.88	1 x 1.76	1 x 2.35	2 x 1.29	2 x 1.29
Dimensions - H x D x W	(2)	mm	1940 x 800 x 1450	1940 x 800 x 1450	1940 x 800 x 1450	1940 x 800 x 2000	1940 x 800 x 2000
Weight - Machine - A	(2)	kg	394	400	428	546	576
Weight - Machine - X	(2)	kg	466	482	516	616	712
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)				
Evaporator			Rifled Copper Tube/Turbulated Aluminium Fins				
			Plain	Plain	Hydrophilic	Plain	Plain
Cooling/Dehum Stages			2/1	2/1	2/1	2/1	2/1
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP				
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 1.5	1 x 3.0	1 x 4.0	2 x 2.2	2 x 2.2
Speed @ 50Pa ESP		rpm	766	953	1048	913	1016
Maximum ESP		Pa	115	160	175	380	175
Speed @ Maximum ESP		rpm	834	1045	1141	1212	1126
Nominal Airflow		m^3/s	2.2	2.8	3.1	3.4	3.8
Compressor - X			Polyolvinyl Oil	Single - Scroll / Polyol Ester Oil			
Quantity			2	2	2	2	2
Oil Charge Volume (Total)		l	1.85 + 1.85	1.85 + 1.85	1.65 + 1.65	1.65 + 1.65	4.10 + 4.10
Refrigeration			Dual Circuit				
Refrigeration Control			Thermostatic Expansion Valve (Optional EEV)				
Refrigeration Type	(4)		R407C (Optional R22)				
Holding Charge			Inert Gas				
Connections							
Liquid (Sweat) - A & X		in	1/2	1/2	1/2	5/8	5/8
Suction (Sweat) - A		in	7/8	7/8	7/8	7/8	1 1/8
Discharge (Sweat) - X		in	1/2	5/8	5/8	3/4	3/4
Condensate Drain Hose		mm	19	19	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm				
Quantity			3	3	3	4	4
OPTIONAL EXTRAS							
Electric Heating		kW	15.0	15.0	15.0	15.0	15.0
Humidifier		kg/hr	1.6 - 8.0	1.6 - 8.0	1.6 - 8.0	3.0 - 15.0	3.0 - 15.0
Feed/Drain			3/4" BSPF Braided flexible hose/19mm hose connection				
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm				
Quantity			3 + 3	3 + 3	N/A	4 + 4	4 + 4
HE & Pre Filter Motor Selection							
Motor / Filter Type			Belt / HE	Belt / HE	N/A	Belt / HE	Belt / HE
Quantity / Motor Size		kW	1 x 2.20	1 x 4.00	N/A	2 x 2.20	2 x 3.00
Speed @ 50Pa ESP		rpm	870	1091	N/A	1044	1202
Maximum ESP		Pa	235	240	N/A	245	235
Speed @ Maximum ESP		rpm	1050	1240	N/A	1214	1340
Fan Gain		kW	1 x 1.29	1 x 2.35	N/A	2 x 1.29	2 x 1.76
Larger Fan Motor Size	(3)						
Motor / Filter Type			Belt / Standard	Belt / Standard	N/A	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 2.20	1 x 4.00	N/A	2 x 3.00	2 x 3.00
Maximum ESP		Pa	330	410	N/A	675	450
Speed @ Maximum ESP		rpm	1046	1242	N/A	1422	1339
Fan Gain		kW	1 x 1.29	1 x 2.35	N/A	2 x 1.76	2 x 1.76
Next Larger Fan Motor Size	(3)						
Motor / Filter Type			Belt / Standard	N/A	N/A	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 3.00	N/A	N/A	2 x 4.00	2 x 4.00
Maximum ESP		Pa	550	N/A	N/A	1055	795
Speed @ Maximum ESP		rpm	1238	N/A	N/A	1591	1528
Fan Gain		kW	1 x 1.76	N/A	N/A	2 x 2.35	2 x 2.35
Condensate Pump							
Head		m	10.8	10.8	10.8	10.8	10.8
Flow		l/m	5	5	5	5	5
Drain			10mm S/Steel Stub Connection				
Low Pressure Hot Water			Copper Coil/Aluminium Fin				
Capacity Gross	(5)	kW	13	15	16	20	22
Water Flow (Nominal)		l/s	0.28	0.33	0.35	0.43	0.48
LPHW Connection Sizes		mm	22	22	22	22	22

(1) Entering air 24°C/45% RH ambient 35°C.
(2) Refer to *Dimensional & Installation Data* Split case information.
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) For refrigerant charges, refer to ***Design Data - Air Cooled Models***.
(5) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Air Cooled Models***.

General Specification - Air Cooled Models

MECHANICAL DATA

Dual Circuit			V50AD V50XD	V55AD V55AX	V65AD V65XD	V80AD V80XD	V90AD V90AX
A Model - Matched Condensing Unit			**CUS7.5 x 2**	**CUS8.5 x 2**	**CUS10 x 2**	**CUS12 x 2**	**CUS30D x 1**
X Model - Matched Condenser			**C35 x 2**	**C35 x 2**	**C45 x 2**	**C45 x 2**	**CS50 x 2**
Capacity							
Nom Cooling (Gross) - A	(1)	kW	38.9	48.0	53.4	66.6	80.8
Nom Cooling (Gross) - X	(1)	kW	41.0	49.1	53.5	66.9	81.5
Capacity Steps			2	2	2	2	2
Fan Gain		kW	2 x 1.29	2 x 1.76	2 x 1.76	2 x 2.35	2 x 3.24
Dimensions - H x D x W	(2)	mm	1940 x 800 x 2000	1940 x 800 x 2000	1940 x 800 x 2550	1940 x 800 x 2550	1940 x 800 x 2550
Weight - Machine - A	(2)	kg	552	588	617	632	679
Weight - Machine - X	(2)	kg	674	726	816	843	924
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)				
Evaporator			Rifled Copper Tube/Turbulated Coated Aluminium Fins				
			Plain	Hydrophilic	Plain	Plain	Hydrophilic
Cooling/Dehum Stages			2/1	2/1	2/1	2/1	2/1
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP				
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	2 x 2.2	2 x 3.0	2 x 3.0	2 x 4.0	2 x 5.5
Speed @ 50Pa ESP		rpm	1069	1175	945	1089	1216
Maximum ESP		Pa	65	90	275	205	145
Speed @ Maximum ESP		rpm	1082	1206	1142	1209	1284
Nominal Airflow		m³/s	4.0	4.4	5.0	5.8	6.5
Compressor - X			Single - Scroll / Polyol Ester Oil				
Quantity			2	2	2	2	2
Oil Charge Volume (Total)		l	3.25 + 3.25	3.80 + 3.80	3.80 + 3.80	3.30 + 3.30	6.20 + 6.20
Refrigeration			Dual Circuit				
Refrigeration Control			Thermostatic Expansion Valve (Optional EEV)				
Refrigeration Type	(4)		R407C (Optional R22)				
Holding Charge			Inert Gas				
Connections							
Liquid (Sweat) - A & X		in	5/8	5/8	5/8	7/8	7/8
Suction (Sweat) - A		in	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8
Discharge (Sweat) - X		in	3/4	3/4	3/4	7/8	1 1/8
Condensate Drain Hose		mm	19	19	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm				
Quantity			4	4	6	6	6
OPTIONAL EXTRAS							
Electric Heating		kW	15.0	15.0	22.5	22.5	30.0
Humidifier		kg/hr	3.0 - 15.0	3.0 - 15.0	3.0 - 15.0	3.0 -15.0	3.0 -15.0
Feed/Drain			3/4" BSPF Braided flexible hose/19mm hose connection				
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm				
Quantity			4 + 4	N/A	6 + 6	6 + 6	N/A
HE & Pre Filter Motor Selection							
Motor / Filter Type			Belt / HE	N/A	Belt / HE	Belt / HE	N/A
Quantity / Motor Size		kW	2 x 3.00	N/A	2 x 3.00	2 x 5.50	N/A
Speed @ 50Pa ESP		rpm	1282	N/A	1105	1231	N/A
Maximum ESP		Pa	70	N/A	95	120	N/A
Speed @ Maximum ESP		rpm	1296	N/A	1143	1284	N/A
Fan Gain		kW	2 x 1.76	N/A	2 x 1.76	2 x 3.24	N/A
Larger Fan Motor Size	(3)						
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard	N/A
Quantity / Motor Size		kW	2 x 3.00	2 x 4.00	2 x 4.00	2 x 5.50	N/A
Maximum ESP		Pa	335	405	450	300	N/A
Speed @ Maximum ESP		rpm	1296	1422	1283	1280	N/A
Fan Gain		kW	2 x 1.76	2 x 2.35	2 x 2.35	2 x 3.24	N/A
Next Larger Fan Motor Size	(3)						
Motor / Filter Type			Belt / Standard	N/A	N/A	N/A	N/A
Quantity / Motor Size		kW	2 x 4.00	N/A	N/A	N/A	N/A
Maximum ESP		Pa	665	N/A	N/A	N/A	N/A
Speed @ Maximum ESP		rpm	1496	N/A	N/A	N/A	N/A
Fan Gain		kW	2 x 2.35	N/A	N/A	N/A	N/A
Condensate Pump							
Head		m	10.8	10.8	10.8	10.8	10.8
Flow		l/m	5	5	5	5	5
Drain			10mm S/Steel Stub Connection				
Low Pressure Hot Water			Copper Coil/Aluminium Fin				
Capacity Gross	(5)	kW	22	24	29	32	34
Water Flow (Nominal)		l/s	0.48	0.52	0.63	0.69	0.74
LPHW Connection Sizes		mm	22	22	22	22	22

(1) Entering air 24°C/45% RH ambient 35°C.
(2) Refer to *Dimensional & Installation Data* Split case information.
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) For refrigerant charges, refer to ***Design Data - Air Cooled Models***.
(5) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Air Cooled Models***.

General Specification - Air Cooled Models

ELECTRICAL DATA

A Models

Single Circuit

			V9A	V13A	V16A	V19A	V23A	V25A
A Model - Matched Condensing Unit			**CUS3**	**CUS4**	**CUS5**	**CUS6**	**CUS7.5**	**CUS8.5**
Unit Data	(1)							
Nominal Run Amps		A	24.2	35.1	35.1	38.6	34.4	35.6
Maximum Start Amps		A	25.3	35.1	35.1	38.6	34.4	35.6
Recommended Mains Fuse Size		A	25	40	40	50	40	40
Max Mains Incoming Cable Size		mm²	35	35	35	35	35	35
Mains Supply	(2)	V			400V / 3PH + N / 50Hz			
Control circuit		VAC	24	24	24	24	24	24
Evaporator Fan - Per Fan								
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 0.74	1 x 1.50	1 x 2.20
Full Load Amps		A	6.60	6.60	6.60	7.60	3.39	4.64
Locked Rotor Amps		A	16.50	16.50	16.50	19.00	23.1	32.50
OPTIONAL EXTRAS								
Electric Heating								
Stage of Reheat			1	2	2	2	2	2
Number of Elements			3	6	6	6	6	6
Rating (Total)		kW	7.5	15.0	15.0	15.0	15.0	15.0
Current Per Phase		A	10.9	21.8	21.8	21.8	21.8	21.8
Humidifier								
Capacity		kg	0.60 - 3.00	0.60 - 3.00	0.60 - 3.00	1.60 - 8.00	1.60 - 8.00	1.60 - 8.00
Rating		kW	2.25	2.25	2.25	6.00	6.00	6.00
Full Load Amps		A	3.390	3.390	3.390	8.70	8.70	8.70
HE & Pre Filter Motor Selection								
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 1.10	1 x 1.50	1 x 2.20
Full Load Amps		A	6.60	6.60	6.60	2.53	3.390	4.64
Locked Rotor Amps		A	16.50	16.50	16.50	16.20	23.1	32.50
Larger Fan Motor - Per Fan								
Quantity / Motor Size		kW	1 x 0.75	1 x 0.75	1 x 1.10	1 x 1.10	1 x 2.20	1 x 3.00
Full Load Amps		A	1.78	1.78	2.53	2.53	4.64	6.18
Locked Rotor Amps		A	8.9	8.9	16.20	16.20	32.50	43.3
Next Larger Fan Motor - Per Fan								
Quantity / Motor Size		kW	N/A	1 x 1.10	1 x 1.50	1 x 1.50	1 x 3.00	N/A
Full Load Amps		A	N/A	2.53	3.39	3.39	6.18	N/A
Locked Rotor Amps		A	N/A	16.20	23.1	23.1	43.3	N/A

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.
(2) Although sizes 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.
(3) Values given for non sub fused products, for sub-fused values, please contact Airedale.

General Specification - Air Cooled Models

ELECTRICAL DATA

A Models

Dual Circuit

			V23AD	V31AD	V35AD	V41AD	V45AD
A Model - Matched Condensing Unit			**CUS4 x 2**	**CUS5 x 2**	**CUS5.5 x 2**	**CUS6 x 2**	**CUS6.5 x 2**
Unit Data	(1)						
Nominal Run Amps		A	34.4	37.2	46.2	47.4	47.4
Maximum Start Amps		A	34.4	43.8	61.4	65.5	65.5
Recommended Mains Fuse Size		A	40	40	50	50	50
Max Mains Incoming Cable Size		mm²	35	35	35	35	35
Mains Supply	(2)	V	400V / 3PH + N / 50Hz				
Control circuit		VAC	24	24	24	24	24
Evaporator Fan - Per Fan							
Quantity / Motor Size		kW	1 x 1.5	1 x 3.0	1 x 4.0	2 x 2.2	2 x 2.2
Full Load Amps		A	3.39	6.18	8.12	4.64	4.64
Locked Rotor Amps		A	21.0	43.3	60.9	32.5	32.5
OPTIONAL EXTRAS							
Electric Heating							
Stage of Reheat			2	2	2	2	2
Number of Elements			6	6	6	6	6
Rating (Total)		kW	15.0	15.0	15.0	15.0	15.0
Current Per Phase		A	21.8	21.8	21.8	21.8	21.8
Humidifier							
Capacity		kg	1.60 - 8.00	1.60 - 8.00	1.60 - 8.00	3.0 - 15.00	3.0 - 15.00
Rating		kW	6.00	6.00	6.00	11.25	11.25
Full Load Amps		A	8.70	8.70	8.70	15.80	15.80
HE & Pre Filter Motor Selection							
Quantity / Motor Size		kW	1 x 2.2	1 x 4.0	N/A	2 x 2.2	2 x 3.0
Full Load Amps		A	4.64	8.12	N/A	4.64	6.18
Locked Rotor Amps		A	32.5	60.9	N/A	32.5	43.3
Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	1 x 2.2	1 x 4.0	N/A	2 x 3.0	2 x 3.0
Full Load Amps		A	4.64	8.12	N/A	6.18	6.18
Locked Rotor Amps		A	32.5	60.9	N/A	43.3	43.3
Next Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	1 x 3.0	N/A	N/A	2 x 4.0	2 x 4.0
Full Load Amps		A	6.18	N/A	N/A	8.12	8.12
Locked Rotor Amps		A	43.3	N/A	N/A	60.9	60.9

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.
(2) Although sizes 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.
(3) Values given for non sub fused products, for sub-fused values, please contact Airedale.

General Specification - Air Cooled Models

ELECTRICAL DATA

A Models

Dual Circuit

			V50AD	V55AD	V65AD	V80AD	V90AD
A Model - Matched Condensing Unit			**CUS7.5 x 2**	**CUS8.5 x 2**	**CUS10 x 2**	**CUS12 x 2**	**(4)CUS30D x 1**
Unit Data	(1)						
Nominal Run Amps		A	47.4	50.5	61.3	65.2	81.7
Maximum Start Amps		A	65.5	87.1	87.1	122.3	140.1
Recommended Mains Fuse Size		A	50	63	80	80	100
Max Mains Incoming Cable Size		mm²	35	35	35	50	50
Mains Supply	(2)	V	400V / 3PH + N / 50Hz				
Control circuit		VAC	24	24	24	24	24
Evaporator Fan - Per Fan							
Quantity / Motor Size		kW	2 x 2.2	2 x 3.0	2 x 3.0	2 x 4.0	2 x 5.5
Full Load Amps		A	4.64	6.18	6.18	8.12	10.9
Locked Rotor Amps		A	32.5	43.3	43.3	60.9	69.8
OPTIONAL EXTRAS							
Electric Heating							
Stage of Reheat			2	2	3	3	4
Number of Elements			6	6	9	9	12
Rating (Total)		kW	15.0	15.0	22.5	22.5	30.0
Current Per Phase		A	21.8	21.8	32.7	32.7	43.6
Humidifier							
Capacity		kg	3.0 - 15.00	3.0 - 15.00	3.0 - 15.00	3.0 - 15.00	3.0 - 15.00
Rating		kW	11.25	11.25	11.25	11.25	11.25
Full Load Amps		A	15.80	15.80	15.80	15.80	15.80
HE & Pre Filter Motor Selection							
Quantity / Motor Size		kW	2 x 3.0	N/A	2 x 3.0	2 x 5.5	N/A
Full Load Amps		A	6.18	N/A	6.18	10.9	N/A
Locked Rotor Amps		A	43.3	N/A	43.3	69.8	N/A
Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	2 x 3.0	2 x 4.0	2 x 4.0	2 x 5.5	N/A
Full Load Amps		A	6.18	8.12	8.12	10.9	N/A
Locked Rotor Amps		A	43.3	60.9	60.9	69.8	N/A
Next Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	2 x 4.0	N/A	N/A	N/A	N/A
Full Load Amps		A	8.12	N/A	N/A	N/A	N/A
Locked Rotor Amps		A	60.9	N/A	N/A	N/A	N/A

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.
(2) Although sizes 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.
(3) Values given for non sub fused products, for sub-fused values, please contact Airedale.
(4) Unit cannot be sub fused.

General Specification - Air Cooled Models

ELECTRICAL DATA

X Models

Single Circuit

			V9X	V13X	V16X	V19X	V23X	V25X
X Model - Matched Condensers			**C11**	**C15**	**C20**	**C25**	**C35**	**C45**
Unit Data	(1)							
Nominal Run Amps		A	27.1	36.9	39.9	40.9	38.2	41.4
Maximum Start Amps		A	64.1	93.6	97.1	130.9	123.7	146.9
Recommended Mains Fuse Size		A	32	40	40	50	50	50
Max Mains Incoming Cable Size		mm²	35	35	35	35	35	35
Mains Supply	(2)	V			400V / 3PH + N / 50Hz			
Control circuit		VAC	24	24	24	24	24	24
Evaporator Fan - Per Fan								
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 0.74	1 x 1.50	1 x 2.20
Full Load Amps		A	6.60	6.60	6.60	7.60	3.39	4.64
Locked Rotor Amps		A	16.50	16.50	16.50	19.00	23.1	32.50
Compressor - Per Compressor								
Quantity / Motor Size		kW	1 x 2.9	1 x 4.1	1 x 4.5	1 x 5.9	1 x 6.8	1 x 8.5
Nominal Run Amps		A	6.4	8.12	8.3	11.0	12.5	14.5
Locked Rotor Amps		A	43.39	61.8	65.5	101.0	98.0	120.0
Type of Start					Direct On Line			
Oil Sump Heater		W	N/A	N/A	N/A	N/A	50	50
OPTIONAL EXTRAS								
Electric Heating								
Stage of Reheat			1	2	2	2	2	2
Number of Elements			3	6	6	6	6	6
Rating (Total)		kW	7.5	15.0	15.0	15.0	15.0	15.0
Current Per Phase		A	10.9	21.8	21.8	21.8	21.8	21.8
Humidifier								
Capacity		kg	0.6 - 3.00	0.6 - 3.00	0.6 - 3.00	1.6 - 8.00	1.6 - 8.00	1.6 - 8.00
Rating		kW	2.25	2.25	2.25	6.00	6.00	6.00
Full Load Amps		A	3.390	3.390	3.390	8.70	8.70	8.70
HE & Pre Filter Motor Selection								
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 1.10	1 x 1.50	1 x 2.20
Full Load Amps		A	6.60	6.60	6.60	2.53	3.39	4.64
Locked Rotor Amps		A	16.50	16.50	16.50	16.20	23.1	32.50
Larger Fan Motor - Per Fan								
Quantity / Motor Size		kW	1 x 0.75	1 x 0.75	1 x 1.10	1 x 1.10	1 x 2.20	1 x 3.00
Full Load Amps		A	1.78	1.78	2.53	2.53	4.64	6.18
Locked Rotor Amps		A	8.9	8.9	16.20	16.20	32.50	43.3
Next Larger Fan Motor - Per Fan								
Quantity / Motor Size		kW	N/A	1 x 1.10	1 x 1.50	1 x 1.50	1 x 3.00	N/A
Full Load Amps		A	N/A	2.53	3.39	3.39	6.18	N/A
Locked Rotor Amps		A	N/A	16.20	23.1	23.1	43.3	N/A

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.
(2) Although sizes 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.
(3) Values given for non sub fused products, for sub-fused values, please contact Airedale.

General Specification - Air Cooled Models

ELECTRICAL DATA

X Models

Dual Circuit

			V23XD	V31XD	V35XD	V41XD	V45XD
X Model - Matched Condensers			**C15 x 2**	**C20 x 2**	**C25 x 2**	**C25 x 2**	**C35 x 2**
Unit Data	(1)						
Nominal Run Amps		A	34.4	37.2	46.2	47.6	51.5
Maximum Start Amps		A	87.7	94.0	104.0	137.6	137.5
Recommended Mains Fuse Size		A	40	40	50	63	63
Max Mains Incoming Cable Size		mm²	35	35	35	35	35
Mains Supply	(2)	V			400V / 3PH + N / 50Hz		
Control circuit		VAC	24	24	24	24	24
Evaporator Fan - Per Fan							
Quantity / Motor Size		kW	1 x 1.5	1 x 3.0	1 x 4.0	2 x 2.2	2 x 2.2
Full Load Amps		A	3.39	6.18	8.12	4.64	4.64
Locked Rotor Amps		A	21.0	43.3	60.9	32.5	32.5
Compressor - Per Compressor							
Quantity / Motor Size		kW	2 x 4.1	2 x 4.5	2 x 5.3	2 x 5.9	2 x 6.7
Nominal Run Amps		A	8.12	8.3	9.1	11.0	12.9
Locked Rotor Amps		A	61.8	65.5	70.5	101.0	99.0
Type of Start					Direct On Line		
Oil Sump Heater		W	N/A	N/A	N/A	N/A	N/A
OPTIONAL EXTRAS							
Electric Heating							
Stage of Reheat			2	2	2	2	2
Number of Elements			6	6	6	6	6
Rating (Total)		kW	15.0	15.0	15.0	15.0	15.0
Current Per Phase		A	21.8	21.8	21.8	21.8	21.8
Humidifier							
Capacity		kg	1.6 - 8.00	1.6 - 8.00	1.6 - 8.00	3.0 - 15.00	3.0 - 15.00
Rating		kW	6.00	6.00	6.00	6.00	11.25
Full Load Amps		A	8.70	8.70	8.70	8.70	15.80
HE & Pre Filter Motor Selection							
Quantity / Motor Size		kW	1 x 2.2	1 x 4.0	N/A	2 x 2.2	2 x 3.0
Full Load Amps		A	4.64	8.12	N/A	4.64	6.18
Locked Rotor Amps		A	32.5	60.9	N/A	32.5	43.3
Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	1 x 2.2	1 x 4.0	N/A	2 x 3.0	2 x 3.0
Full Load Amps		A	4.64	8.12	N/A	6.18	6.18
Locked Rotor Amps		A	32.5	60.9	N/A	43.3	43.3
Next Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	1 x 3.0	N/A	N/A	2 x 4.0	2 x 4.0
Full Load Amps		A	6.18	N/A	N/A	8.12	8.12
Locked Rotor Amps		A	43.3	N/A	N/A	60.9	60.9

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.

(2) Values given for non sub fused products, for sub-fused values, please contact Airedale.

General Specification - Air Cooled Models

ELECTRICAL DATA

X Models

Dual Circuit

			V50XD	V55XD	V65XD	V80XD	V90XD
X Model - Matched Condensers			**C35 x 2**	**C35 x 2**	**C45 x 2**	**C45 x 2**	**CS50 x 2**
Unit Data	(1)						
Nominal Run Amps		A	50.6	57.7	61.7	78.3	90.0
Maximum Start Amps		A	136.1	163.2	165.6	200.4	240.9
Recommended Mains Fuse Size		A	63	63	80	100	100
Max Mains Incoming Cable Size		mm²	35	35	35	50	50
Mains Supply	(2)	V			400V / 3PH + N / 50Hz		
Control circuit		VAC	24	24	24	24	24
Evaporator Fan - Per Fan							
Quantity / Motor Size		kW	2 x 2.2	2 x 3.0	2 x 3.0	2 x 4.0	2 x 5.5
Full Load Amps		A	4.64	6.18	6.18	8.12	10.9
Locked Rotor Amps		A	32.5	43.3	43.3	60.9	69.8
Compressor - Per Compressor							
Quantity / Motor Size		kW	2 x 6.8	2 x 8.5	2 x 9.7	2 x 11.8	2 x 13.6
Nominal Run Amps		A	12.5	14.5	16.1	22.9	24.1
Locked Rotor Amps		A	98.0	120.0	120.0	145.0	175.0
Type of Start					Direct On Line		
Oil Sump Heater		W	50	50	50	50	50
OPTIONAL EXTRAS							
Electric Heating							
Stage of Reheat			2	2	3	3	4
Number of Elements			6	6	9	9	12
Rating (Total)		kW	15.0	15.0	22.5	22.5	30.0
Current Per Phase		A	21.8	21.8	32.7	32.7	43.6
Humidifier							
Capacity		kg	3.0 -15.00	3.0 -15.00	3.0 -15.00	3.0 -15.00	3.0 -15.00
Rating		kW	11.25	11.25	11.25	11.25	11.25
Full Load Amps		A	15.80	15.80	15.80	15.80	15.80
HE & Pre Filter Motor Selection							
Quantity / Motor Size		kW	2 x 3.0	N/A	2 x 3.0	2 x 5.5	N/A
Full Load Amps		A	6.18	N/A	6.18	10.9	N/A
Locked Rotor Amps		A	43.3	N/A	43.3	69.8	N/A
Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	2 x 3.0	2 x 4.0	2 x 4.0	2 x 5.5	N/A
Full Load Amps		A	6.18	8.12	8.12	10.9	N/A
Locked Rotor Amps		A	43.3	60.9	60.9	69.8	N/A
Next Larger Fan Motor - Per Fan							
Quantity / Motor Size		kW	2 x 4.0	N/A	N/A	N/A	N/A
Full Load Amps		A	8.12	N/A	N/A	N/A	N/A
Locked Rotor Amps		A	60.9	N/A	N/A	N/A	N/A

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.

(2) Values given for non sub fused products, for sub-fused values, please contact Airedale.

Sound Data - Air Cooled Models

A Models

Front Return Air

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V9A	D A	70	62	64	70	70	64	57	56	48
	R A	51	64	61	51	47	44	41	34	20
	C B	51	64	61	51	47	44	41	34	20
	S @ 3m	36	50	46	37	32	30	26	19	5
V13A	D A	76	68	70	76	75	70	63	61	54
	R A	57	70	66	57	52	50	46	39	25
	C B	57	70	66	57	52	50	46	39	25
	S @ 3m	42	55	52	42	38	35	32	25	11
V16A	D A	81	73	75	81	81	75	68	67	59
	R A	62	75	72	62	58	55	52	45	31
	C B	62	75	72	62	58	55	52	45	31
	S @ 3m	47	61	57	48	43	41	37	30	16
V19A	D A	86	73	79	81	83	81	77	75	69
	R A	60	73	69	60	55	53	49	42	28
	C B	60	73	69	60	55	53	49	42	28
	S @ 3m	45	58	55	45	41	38	35	28	14
V23A	D A	81	74	78	76	77	76	74	72	67
	R A	63	76	73	61	57	58	54	50	48
	C B	63	76	73	61	57	58	54	50	48
	S @ 3m	49	62	59	47	42	43	40	36	34
V25A	D A	85	75	81	79	81	79	78	78	72
	R A	67	77	76	64	61	60	58	56	53
	C B	67	77	76	64	61	60	58	56	53
	S @ 3m	52	62	62	50	46	46	44	42	39
V23AD	D A	83	76	79	77	79	78	75	73	68
	R A	65	78	75	63	58	59	56	52	50
	C B	65	78	75	63	58	59	55	51	50
	S @ 3m	50	63	60	48	44	45	41	37	35
V31AD	D A	88	81	85	82	84	83	81	79	73
	R A	70	83	80	68	64	64	61	57	55
	C B	70	83	80	68	64	64	61	57	55
	S @ 3m	55	68	65	53	49	50	46	42	40

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V35AD	D A	92	78	87	84	89	85	85	85	80
	R A	73	80	82	69	68	66	65	64	62
	C B	73	80	82	69	68	66	65	64	62
	S @ 3m	59	66	67	55	54	52	50	49	47
V41AD	D A	80	81	81	76	78	75	72	70	64
	R A	74	85	82	72	68	69	66	63	61
	C B	74	85	82	72	68	69	66	63	61
	S @ 3m	60	70	67	57	54	54	52	49	46
V45AD	D A	84	84	86	79	80	77	76	76	69
	R A	78	88	87	75	71	70	70	69	66
	C B	78	88	87	75	71	70	70	69	66
	S @ 3m	63	73	72	60	56	55	55	55	51
V50AD	D A	84	84	85	80	81	79	76	74	68
	R A	78	88	85	75	72	72	70	67	64
	C B	78	88	85	75	72	72	70	67	64
	S @ 3m	63	74	71	61	57	58	55	52	50
V55AD	D A	87	84	90	83	83	80	78	79	73
	R A	81	88	91	78	74	73	72	72	70
	C B	81	88	91	78	74	73	72	72	70
	S @ 3m	66	74	77	64	59	58	58	58	55
V65AD	D A	83	89	84	81	79	78	75	72	66
	R A	74	86	82	74	69	68	65	61	54
	C B	74	86	82	74	69	68	65	61	54
	S @ 3m	59	71	68	59	54	54	50	46	40
V80AD	D A	86	93	87	84	82	81	79	75	69
	R A	77	89	86	77	72	72	68	64	58
	C B	77	89	86	77	72	72	68	64	58
	S @ 3m	63	75	71	62	58	57	54	49	43
V90AD	D A	89	95	90	86	85	84	81	78	72
	R A	80	92	88	79	75	74	71	66	60
	C B	80	92	88	79	75	74	71	66	60
	S @ 3m	65	77	74	65	60	60	56	52	46

Key:
D A = Discharge Air Sound Power
R A = Return Air Sound Power
C B = Case Breakout Sound Power
S @ 3m = Sound Pressure at 3m

(1) dB(A) is the overall sound level, measured on the A scale.
(2) All sound data measured at nominal conditions.
(3) Refer to ***Sound Measurement Method***.

The Sound Pressure data quoted is only valid where the unit is installed on a solid floor (Front and Rear return air only) or false floor (Base return air only) and against a rear wall. If the equipment is placed adjacent to any other vertical reflective walls, values may vary to those stated, typically increasing by 3dB for each side added. Values stated do not include for room reverberation conditions.

Sound Data - Air Cooled Models

A Models

Rear & Base Return Air (Base Return Air Available on Sizes 19 - 90 Only)

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V9A	D A	70	62	64	70	70	64	57	56	48
	R A	58	64	63	58	54	53	49	44	40
	C B	48	62	57	51	45	40	35	26	19
	S @ 3m	34	48	42	37	31	26	20	11	4
V13A	D A	76	68	70	76	75	70	63	61	54
	R A	64	70	69	64	60	59	55	50	46
	C B	54	68	63	57	51	46	40	32	25
	S @ 3m	39	53	48	43	36	32	26	17	10
V16A	D A	81	73	75	81	81	75	68	67	59
	R A	69	75	74	69	65	64	60	55	51
	C B	59	73	68	62	56	51	46	37	30
	S @ 3m	45	59	53	48	42	37	31	22	15
V19A	D A	79	71	73	79	78	73	66	64	57
	R A	68	73	73	68	64	63	59	54	50
	C B	58	71	67	61	55	50	44	36	29
	S @ 3m	43	56	52	47	40	36	30	21	14
V23A	D A	81	74	78	76	77	76	74	72	67
	R A	73	78	79	71	68	68	66	61	54
	C B	62	72	72	62	59	56	52	45	34
	S @ 3m	48	57	57	48	44	41	37	30	20
V25A	D A	85	75	81	79	81	79	78	78	72
	R A	77	78	82	75	72	70	70	67	60
	C B	65	72	75	66	62	58	56	51	40
	S @ 3m	51	58	60	51	48	44	42	37	25
V23AD	D A	83	76	79	77	79	78	75	73	68
	R A	74	79	81	73	70	69	67	63	56
	C B	64	73	73	64	60	57	53	46	36
	S @ 3m	49	59	59	49	45	43	39	32	21
V31AD	D A	88	81	85	82	84	83	81	79	73
	R A	80	85	86	78	75	74	72	68	61
	C B	69	78	79	69	65	62	59	52	41
	S @ 3m	54	64	64	55	51	48	44	37	26

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V35AD	D A	92	78	87	84	89	85	85	85	80
	R A	83	82	88	79	80	76	76	75	68
	C B	72	76	81	70	70	64	63	59	48
	S @ 3m	57	61	66	56	55	50	48	44	34
V41AD	D A	80	81	81	76	78	75	72	70	64
	R A	75	78	81	72	72	70	65	62	55
	C B	65	73	74	65	62	59	53	50	41
	S @ 3m	51	58	60	50	48	45	39	35	27
V45AD	D A	84	84	86	79	80	77	76	76	69
	R A	78	80	86	75	74	71	69	68	61
	C B	68	76	80	68	65	61	57	56	46
	S @ 3m	54	61	65	53	50	46	42	41	32
V50AD	D A	84	84	85	80	81	79	76	74	68
	R A	78	81	85	76	75	74	69	66	59
	C B	69	76	78	68	66	63	57	53	45
	S @ 3m	54	62	63	54	51	48	42	39	30
V55AD	D A	87	84	90	83	83	80	78	79	73
	R A	81	81	90	79	77	74	71	71	64
	C B	72	76	84	71	68	64	59	59	50
	S @ 3m	57	62	69	57	53	49	45	44	36
V65AD	D A	83	89	84	81	79	78	75	72	66
	R A	75	83	81	73	71	69	66	62	54
	C B	69	81	78	71	64	63	60	54	45
	S @ 3m	55	66	64	57	50	49	45	39	31
V80AD	D A	86	93	87	84	82	81	79	75	69
	R A	78	86	85	76	74	73	69	65	57
	C B	73	84	81	74	68	67	63	57	48
	S @ 3m	58	70	67	60	53	52	48	42	34
V90AD	D A	89	95	90	86	85	84	81	78	72
	R A	80	88	87	78	77	75	71	68	60
	C B	75	87	84	77	70	69	65	59	51
	S @ 3m	61	72	69	62	56	55	51	45	36

Key:
D A = Discharge Air Sound Power
R A = Return Air Sound Power
C B = Case Breakout Sound Power
S @ 3m = Sound Pressure at 3m

(1) dB(A) is the overall sound level, measured on the A scale.
(2) All sound data measured at nominal conditions.
(3) Refer to ***Sound Measurement Method***.

The Sound Pressure data quoted is only valid where the unit is installed on a solid floor (Front and Rear return air only) or false floor (Base return air only) and against a rear wall. If the equipment is placed adjacent to any other vertical reflective walls, values may vary to those stated, typically increasing by 3dB for each side added. Values stated do not include for room reverberation conditions.

AIR COOLED

Sound Data - Air Cooled Models

X Models

Front Return Air

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V9X	D A	70	62	64	70	70	64	57	56	48
	R A	64	64	61	52	53	54	56	61	55
	C B	64	64	61	52	53	54	56	61	55
	S @ 3m	49	50	46	37	39	39	41	46	40
V13X	D A	76	68	70	76	75	70	63	61	54
	R A	70	70	66	57	60	66	63	63	61
	C B	70	70	66	57	60	66	63	63	61
	S @ 3m	56	55	52	43	46	51	48	48	46
V16X	D A	81	73	75	81	81	75	68	67	59
	R A	70	75	72	62	64	66	62	62	60
	C B	70	75	72	62	64	66	62	62	60
	S @ 3m	56	61	57	48	49	52	48	48	45
V19X	D A	86	73	79	81	83	81	77	75	69
	R A	70	73	69	60	63	66	62	62	60
	C B	70	73	69	60	63	66	62	62	60
	S @ 3m	56	58	55	46	49	52	48	48	46
V23X	D A	82	74	78	76	77	77	75	74	69
	R A	71	77	73	61	63	66	64	64	61
	C B	71	77	73	61	63	66	64	64	61
	S @ 3m	56	62	59	47	48	51	50	49	47
V25X	D A	85	75	81	79	81	79	78	78	72
	R A	76	78	76	65	71	66	72	69	64
	C B	76	78	76	65	71	66	72	69	64
	S @ 3m	62	63	62	50	56	52	58	54	50
V23XD	D A	84	76	79	77	79	79	76	75	70
	R A	74	78	75	63	64	69	66	66	64
	C B	74	78	75	63	64	69	66	66	64
	S @ 3m	59	63	60	48	49	55	51	52	50
V31XD	D A	89	81	85	82	84	84	82	80	74
	R A	75	83	80	68	68	70	66	66	64
	C B	75	83	80	68	68	70	66	66	64
	S @ 3m	60	68	65	53	53	56	52	51	49

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V35XD	D A	92	78	87	84	89	85	85	85	80
	R A	77	80	82	69	69	73	69	70	65
	C B	77	80	82	69	69	73	69	70	65
	S @ 3m	63	66	67	55	55	58	55	56	50
V41XD	D A	81	81	81	76	78	76	73	71	66
	R A	77	85	82	72	70	72	69	68	65
	C B	77	85	82	72	70	72	69	68	65
	S @ 3m	62	70	67	57	55	57	54	53	51
V45XD	D A	84	84	86	79	80	77	76	76	69
	R A	82	88	87	75	78	76	76	74	67
	C B	82	88	87	75	78	76	76	74	67
	S @ 3m	68	73	72	61	63	61	62	59	53
V50XD	D A	84	84	85	80	81	79	77	76	70
	R A	79	88	85	75	72	74	72	70	67
	C B	79	88	85	75	72	74	72	70	67
	S @ 3m	64	74	71	61	58	59	57	55	53
V55XD	D A	87	84	90	83	83	80	78	79	73
	R A	83	88	91	78	77	74	77	75	72
	C B	83	88	91	78	77	74	77	75	72
	S @ 3m	69	74	77	64	62	60	62	60	57
V65XD	D A	84	89	84	81	79	78	77	74	68
	R A	80	86	82	74	75	71	75	72	66
	C B	80	86	82	74	75	71	75	72	66
	S @ 3m	66	72	68	59	60	57	61	57	52
V80XD	D A	87	93	87	84	83	82	80	77	71
	R A	84	89	86	77	81	77	77	74	67
	C B	84	89	86	77	81	77	77	74	67
	S @ 3m	69	75	71	62	66	63	63	59	53
V90XD	D A	89	95	90	86	85	84	81	78	72
	R A	85	92	88	80	81	80	79	75	72
	C B	85	92	88	80	81	80	79	75	72
	S @ 3m	71	77	74	65	66	65	64	61	58

Key:
D A = Discharge Air Sound Power
R A = Return Air Sound Power
C B = Case Breakout Sound Power
S @ 3m = Sound Pressure at 3m

(1) dB(A) is the overall sound level, measured on the A scale.
(2) All sound data measured at nominal conditions.
(3) Refer to ***Sound Measurement Method***.

The Sound Pressure data quoted is only valid where the unit is installed on a solid floor (Front and Rear return air only) or false floor (Base return air only) and against a rear wall. If the equipment is placed adjacent to any other vertical reflective walls, values may vary to those stated, typically increasing by 3dB for each side added. Values stated do not include for room reverberation conditions.

Sound Data - Air Cooled Models

X Models

Rear Return Air(1)

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V9X	D A	70	62	64	70	70	64	57	56	48
	R A	58	64	63	58	54	53	49	44	40
	C B	51	62	57	51	47	44	42	42	34
	S @ 3m	36	48	43	37	33	29	27	28	19
V13X	D A	76	68	70	76	75	70	63	61	54
	R A	64	70	69	64	60	59	55	50	46
	C B	58	68	63	57	54	54	48	45	40
	S @ 3m	43	53	48	43	39	39	34	30	25
V16X	D A	81	73	75	81	81	75	68	67	59
	R A	69	75	74	69	65	64	60	55	51
	C B	61	73	68	62	58	56	49	45	39
	S @ 3m	46	59	53	48	43	41	35	30	24
V19X	D A	79	71	73	79	78	73	66	64	57
	R A	68	73	73	68	64	63	59	54	50
	C B	60	71	67	61	57	55	49	45	39
	S @ 3m	46	56	52	47	43	41	35	30	24
V23X	D A	82	74	78	76	77	77	75	74	69
	R A	73	78	79	71	68	68	66	61	54
	C B	63	72	72	63	59	58	54	49	42
	S @ 3m	49	57	57	48	45	43	40	35	27
V25X	D A	85	75	81	79	81	79	78	78	72
	R A	77	78	82	75	72	70	70	67	60
	C B	67	73	75	66	65	59	60	55	45
	S @ 3m	53	58	60	51	50	45	46	40	31
V23XD	D A	84	76	79	77	79	79	76	75	70
	R A	74	79	81	73	70	69	67	63	56
	C B	65	73	73	64	61	60	56	51	45
	S @ 3m	50	59	59	49	46	45	41	37	30
V31XD	D A	89	81	85	82	84	84	82	80	74
	R A	80	85	86	78	75	74	72	68	61
	C B	69	78	79	69	66	64	59	54	45
	S @ 3m	55	64	64	55	51	49	45	39	31

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V35XD	D A	92	78	87	84	89	85	85	85	80
	R A	83	82	88	79	80	76	76	75	68
	C B	72	76	81	70	70	66	63	60	49
	S @ 3m	58	61	66	56	55	51	49	45	34
V41XD	D A	81	81	81	76	78	76	73	71	66
	R A	75	78	81	72	72	70	65	62	55
	C B	67	73	74	65	63	62	56	55	50
	S @ 3m	52	58	60	50	49	47	42	40	35
V45XD	D A	84	84	86	79	80	77	76	76	69
	R A	78	80	86	75	74	71	69	68	61
	C B	72	76	80	68	69	65	64	61	50
	S @ 3m	57	61	65	53	55	51	50	46	35
V50XD	D A	84	84	85	80	81	79	77	76	70
	R A	78	81	85	76	75	74	69	66	59
	C B	69	77	78	68	66	64	59	57	51
	S @ 3m	55	62	63	54	52	49	45	42	36
V55XD	D A	87	84	90	83	83	80	78	79	73
	R A	81	81	90	79	77	74	71	71	64
	C B	73	77	84	71	69	65	65	62	55
	S @ 3m	59	63	69	57	55	50	50	47	40
V65XD	D A	84	89	84	81	79	78	77	74	68
	R A	75	83	81	73	71	69	66	62	54
	C B	74	81	78	71	69	66	69	63	57
	S @ 3m	59	67	64	57	54	51	55	49	43
V80XD	D A	87	93	87	84	83	82	80	77	71
	R A	78	86	85	76	74	73	69	65	57
	C B	78	84	81	75	74	72	71	66	58
	S @ 3m	63	70	67	60	60	57	57	51	44
V90XD	D A	89	95	90	86	85	84	81	78	72
	R A	80	88	87	78	77	75	71	68	60
	C B	79	87	84	77	74	74	73	67	63
	S @ 3m	65	72	69	63	60	59	58	53	48

Key:
D A = Discharge Air Sound Power
R A = Return Air Sound Power
C B = Case Breakout Sound Power
S @ 3m = Sound Pressure at 3m

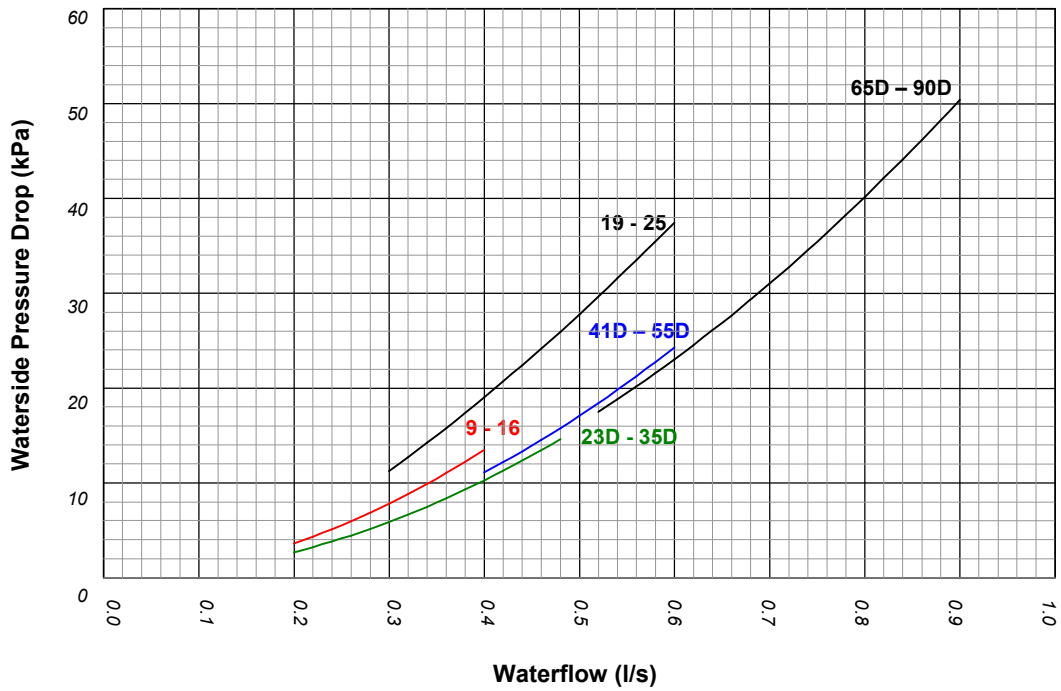
(1) Rear return option only available.
(2) dB(A) is the overall sound level, measured on the A scale.
(3) All sound data measured at nominal conditions.
(4) Refer to ***Sound Measurement Method***.

The Sound Pressure data quoted is only valid where the unit is installed on a solid floor (Front and Rear return air only) or false floor (Base return air only) and against a rear wall. If the equipment is placed adjacent to any other vertical reflective walls, values may vary to those stated, typically increasing by 3dB for each side added. Values stated do not include for room reverberation conditions.

AIR COOLED

Design Data - Air Cooled Models

LOW PRESSURE HOT WATER (OPTIONAL EXTRA)



(1) Includes coil, 3 port valve and pipework.
(2) To calculate 3 port valve pressure drop

ΔP valve = $\left(\frac{Q}{M}\right)^2$ where ΔP = Pressure Drop in kPa, Q = Water Flow Rate in l/s and M = $\left(\frac{Kv}{36}\right)$

M Values

Model Sizes	9 - 90
LPHW	0.17

Design Data - Air Cooled Models

SYSTEM PIPEWORK SCHEMATIC

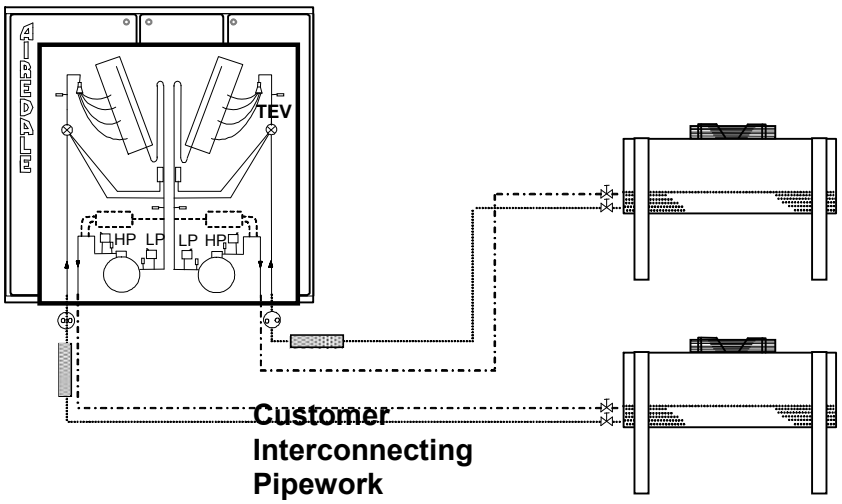
Design should be in accordance with good refrigeration practice to ensure good oil return to the compressor under all normal operating conditions to prolong the life of your unit.

KEY:

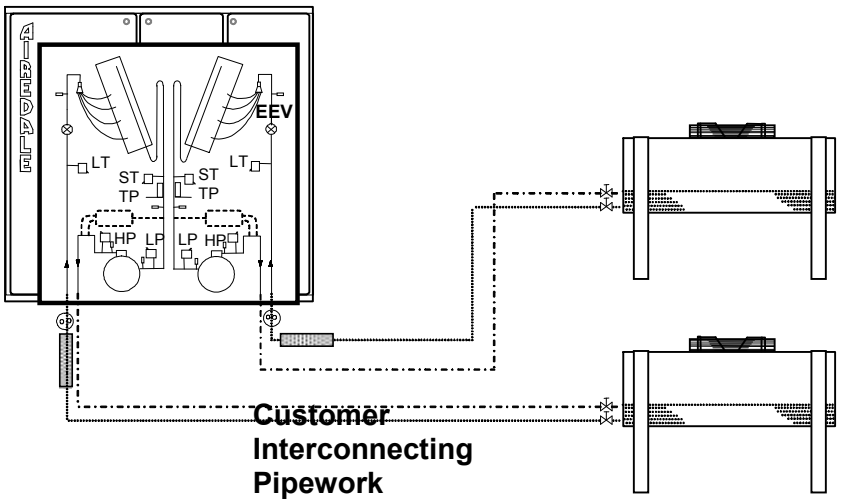
LP	Low Pressure Switch
HP	High Pressure Switch
LT	Liquid Line Pressure Transducer
ST	Suction Line Pressure Transducer
TP	Suction Line Temperature Probe
TEV	Thermostatic Expansion Valve
EEV	Electronic Expansion valve
	Discharge Line
	Liquid Line
	Schrader Point
	Sight Glass (Supplied Loose)
	Filter Drier (Supplied Loose)
	Shut Off Valve (Optional) (Supplied loose) - Condensers
	Condenser Fan & Motor
	Condenser Coil
	Oil Separators (Optional)
	Compressor

X MODELS (SHOWN WITH MATCHED CONDENSERS)

Thermostatic Expansion Valve (TEV)



Electronic Expansion Valve (EEV)



AIR COOLED

Design Data - Air Cooled Models

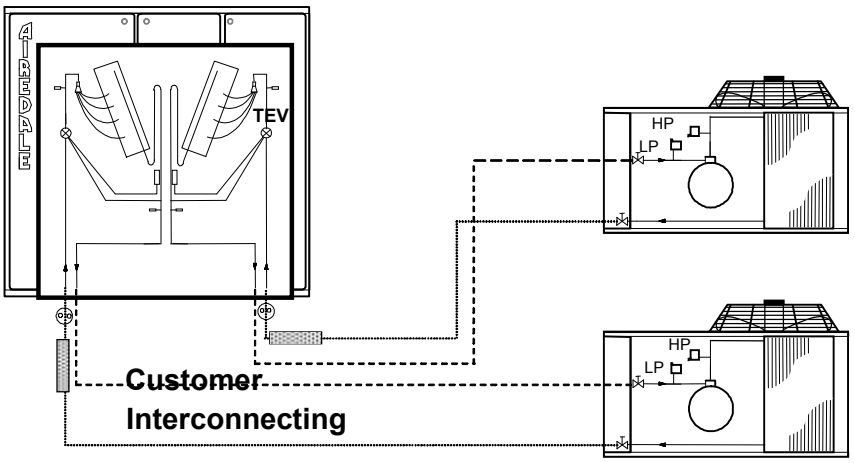
SYSTEM PIPEWORK SCHEMATIC

KEY:

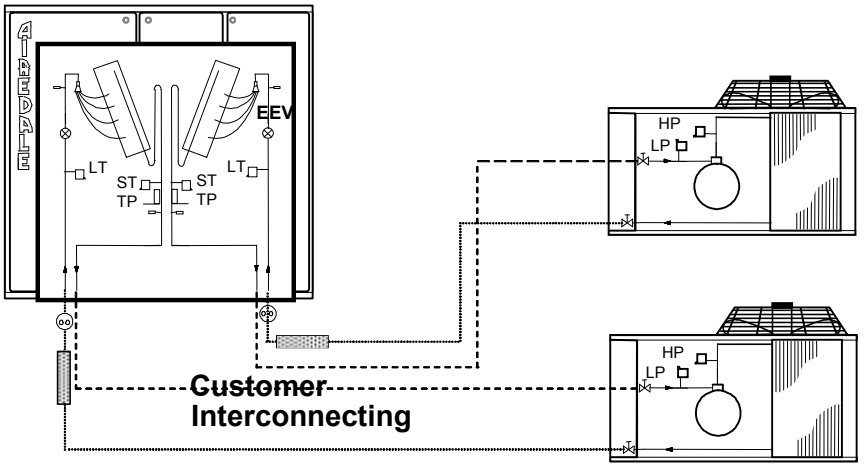
LP	Low Pressure Switch
HP	High Pressure Switch
LT	Liquid Line Pressure Transducer
ST	Suction Line Pressure Transducer
TP	Suction Line Temperature Probe
TEV	Thermostatic Expansion Valve
EEV	Electronic Expansion valve
	Suction Line
	Liquid Line
	Schrader Point
	Sight Glass (Supplied Loose)
	Filter Drier (Supplied Loose)
	Shut Off Valve - Condensing Units
	Condensing Unit Fan & Motor
	Condensing Coil
	Compressor

A MODELS (SHOWN WITH MATCHED CONDENSING UNITS)

Thermostatic Expansion Valve (TEV)



Electronic Expansion Valve (EEV)



Design Data - Air Cooled Models

REFRIGERANT PIPE SIZING GUIDE

Pipe lengths calculated for Indoor unit with standard Outdoor unit match. For Outdoor unit connections sizes, please refer to relevant **Installation Manual**.

REFRIGERANT PIPEWORK SIZING GUIDE

Indoor	Outdoor	Indoor Unit Connection Sizes			Equivalent Pipe Lengths with R407C			
		Liquid	Suction	Discharge	Equivalent Length	Liquid A & X Models	Suction A Models	Discharge X Models
V9A	CUS3	1/2”	3/4”	1/2”	0-15m	3/8”	3/4”	5/8”
V9X	C11				15-40m	1/2”	7/8”	5/8”
V13A	CUS4	1/2”	7/8”	1/2”	0-15m	1/2”	7/8”	5/8”
V13X	C15				15-40m	5/8”	1 1/8”	3/4”
V16A	CUS5	1/2”	7/8”	5/8”	0-15m	1/2”	7/8”	5/8”
V16X	C20				15-40m	5/8”	1 1/8”	3/4”
V19A	CUS6	5/8”	7/8”	3/4”	0-15m	1/2”	7/8”	3/4”
V19X	C25				15-40m	5/8”	1 1/8”	7/8”
V23A	CUS7.5	5/8”	1 1/8”	3/4”	0-15m	5/8”	1 1/8”	3/4”
V23X	C35				15-40m	3/4”	1 3/8”	7/8”
V25A	CUS8.5	5/8”	1 1/8”	7/8”	0-15m	5/8”	1 1/8”	7/8”
V25X	C45				15-40m	3/4”	1 3/8”	1 1/8”
V23AD	CUS4 x 2	1/2”	7/8”	1/2”	0-15m	1/2”	7/8”	5/8”
V23XD	C15 x 2				15-40m	5/8”	1 1/8”	3/4”
V31AD	CUS5 x 2	1/2”	7/8”	5/8”	0-15m	1/2”	7/8”	5/8”
V31XD	C20 x 2				15-40m	5/8”	1 1/8”	3/4”
V35AD	CUS5.5 x 2	1/2”	7/8”	5/8”	0-15m	1/2”	7/8”	5/8”
V35XD	C25 x 2				15-40m	5/8”	1 1/8”	3/4”
V41AD	CUS6 x 2	5/8”	7/8”	3/4”	0-15m	1/2”	7/8”	3/4”
V41XD	C25 x 2				15-40m	5/8”	1 1/8”	7/8”
V45AD	CUS6.5 x 2	5/8”	1 1/8”	3/4”	0-15m	5/8”	1 1/8”	3/4”
V45XD	C35 x 2				15-40m	3/4”	1 3/8”	7/8”
V50AD	CUS7.5 x 2	5/8”	1 1/8”	3/4”	0-15m	5/8”	1 1/8”	3/4”
V50XD	C35 x 2				15-40m	3/4”	1 3/8”	7/8”
V55AD	CUS8.5 x 2	5/8”	1 1/8”	3/4”	0-15m	5/8”	1 1/8”	7/8"
V55XD	C35 x 2				15-40m	3/4”	1 3/8”	1 1/8"
V65AD	CUS10 x 2	5/8”	1 1/8”	3/4”	0-15m	5/8”	1 1/8”	7/8”
V65XD	C45 x 2				15-40m	3/4”	1 3/8”	1 1/8”
V80AD	CUS12 x 2	7/8”	1 1/8”	7/8”	0-15m	5/8”	1 3/8”	7/8”
V80XD	C45 x 2				15-40m	3/4”	1 5/8”	1 1/8”
V90AD	CUS30D	7/8”	1 3/8”	1 1/8”	0-15m	5/8”	1 3/8”	1 1/8”
V90XD	CS50 x 2				15-40m	7/8"	1 5/8"	1 3/8"

Design Data - Air Cooled Models

REFRIGERANT CHARGING GUIDE

The following information can be used to estimate the refrigerant quantity required in a split system installation.

Unit Refrigerant Charge (Kg/Circuit)

The following table shows the refrigerant charge / circuit for the indoor and outdoor units.

Indoor Unit (IR)		kg/Circuit	Condenser (OR)	kg/Circuit	Condensing Unit (OR)	kg/Circuit (1)
V 9 - 16	**A & X**	2.1	**C 11 - 15**	2.1	**CUS 3 - 4**	1.5
V 19 - 23	**A & X**	3.8	**C 20**	2.3	**CUS 5 - 6**	2.4
V 25	**A & X**	4.6	**C 25**	3.1	**CUS 6.5 - 7.5**	3.6
V 23D - 31D	**A & X**	2.7	**C 35 - 45**	6.1	**CUS 8.5 - 12**	4.8
V 35	**A & X**	4.1	**CS 50**	10.0	**CUS 30D**	9.0
V 41D & 50D	**A & X**	4.1				
V 45D & 55D	**A & X**	6.1				
V 65D - 80D	**A & X**	6.7				
V 90D	**A & X**	8.0				

(1) CUS3-4 models are delivered PRECHARGED with refrigerant.

Liquid Line Refrigerant Charge (kg/m)

The following table shows the refrigerant charge / metre for the liquid line, using R407C and assuming liquid line temperature of 40°C.

Liquid Line (m)	kg/m
3/8”	0.05
1/2”	0.10
5/8”	0.16
3/4”	0.24
7/8”	0.33
1 1/8”	0.58

IMPORTANT

The pipe sizes/refrigerant charges quoted are for guidance only. It is the responsibility of the installing contractor/site engineer to check the pipe sizes/refrigerant charge are correct for each system installation and application.

Split systems may require additional oil which should be added to the low side of each compressor.

Design should be in accordance with accepted refrigeration practice to ensure good oil return to the compressor(s) under all normal operating conditions.

Design Data - Air Cooled Models

REFRIGERANT CHARGING GUIDE

To Calculate the Liquid Line Refrigerant Charge (kg)

The liquid line refrigerant charge can be calculated using the following equation:

LR = L x m

Where:
LR = Total Liquid Line Refrigerant charge (kg)
L = Length of Interconnecting pipework (metres)
m = Liquid Line Refrigerant charge / metre. Refer to ***Liquid Line Refrigerant Charge (kg/m)*** in this section.

To Calculate the System Refrigerant Charge (kg)

The system refrigerant charge can be calculated using the following equation:

SR = LR + IR + OR

Where:
SR = Total System Refrigerant charge (kg)
LR = Total Liquid Line Refrigerant charge. (As calculated from above)
IR = Indoor Unit Refrigerant Charge. Refer to ***Unit Refrigerant Charge (Kg/Circuit)*** in this section.
OR = Outdoor Unit Refrigerant Charge. Refer to ***Unit Refrigerant Charge (Kg/Circuit)*** in this section.

Example

Indoor Unit Model Ref. = V65AD (Dual Circuit)
Outdoor Unit Model Ref. = 2 x CUS10 Condensing Units
Interconnecting Pipework = 10 metres

Selecting The Liquid Line Size

From the ***Refrigerant Pipework Sizing Guide*** table in this section, the liquid line size given for pipework length of 10 metres is:

Liquid Line Size = 5/8”

Liquid Line Refrigerant Charge

LR = L x m

Where:
L = 10 metres
m = 0.16 kg/m

LR = 10 x 0.16

Liquid Line Charge = 1.6 kg

System Refrigerant Charge

SR = LR + IR + OR

Where:
LR = 1.6 kg (As calculated from above)
IR = 6.7 kg
OR = 4.8 kg

SR = 1.6 + 6.7 + 4.8

System Refrigerant Charge = 13.1kg / Circuit (1)

(1) CUS3-4 models are delivered PRECHARGED with refrigerant.

AIR COOLED

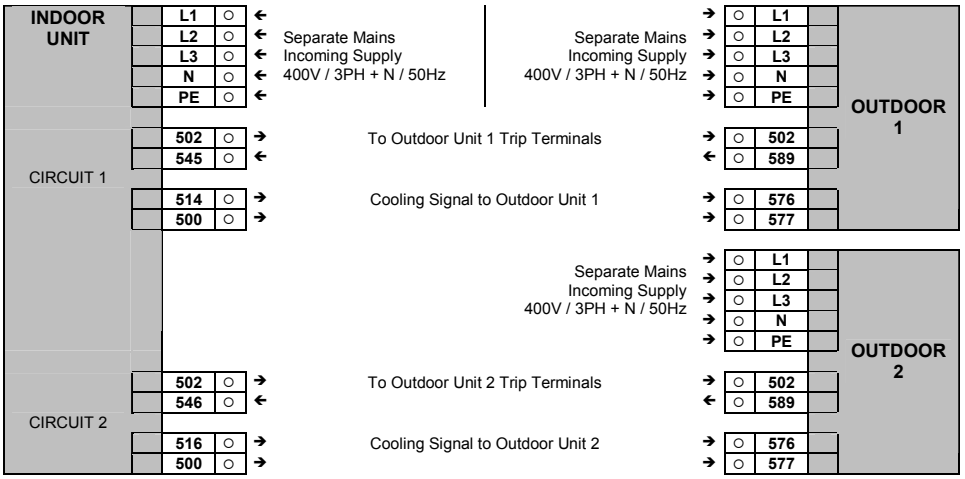
Design Data - Air Cooled Models

INTERCONNECTING WIRING - A MODELS

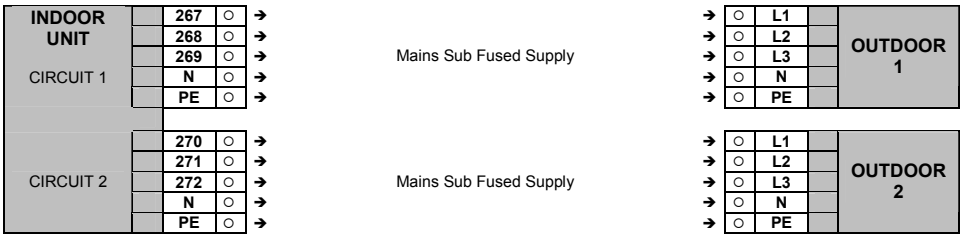
Head Pressure Control - Standard (Stand Alone)

Sizes 9 - 80AD

No Sub Fusing (1)



With Sub Fusing



(1) Although models 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.

CABLE INSTALLATION

In line with IEE Wiring Regulations, the following should be observed:

- Extra low voltage control cables (ELV) and mains power cable should be segregated by a minimum distance of 50mm
- If cables must cross, it is recommended that they cross at right angles
- Airedale recommends that ELV cables are screened at one end to earthed enclosures

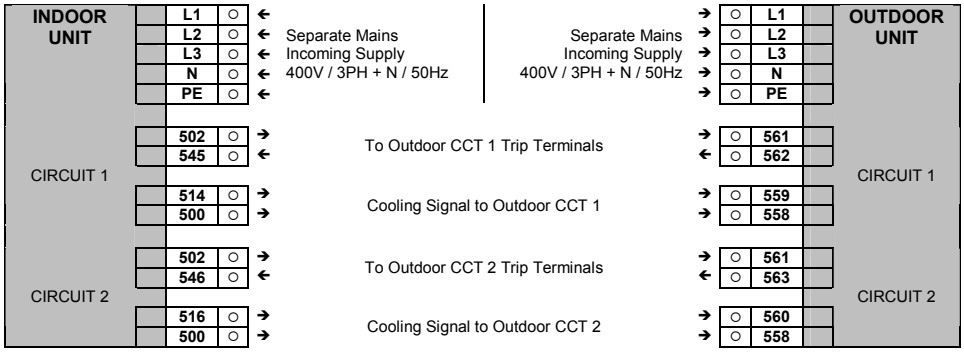
Design Data - Air Cooled Models

INTERCONNECTING WIRING - A MODELS

Head Pressure Control - Standard (Stand Alone)

Model V90AD

No Sub Fusing (1)



(1) CUS30D units cannot be sub-fused.

CABLE INSTALLATION

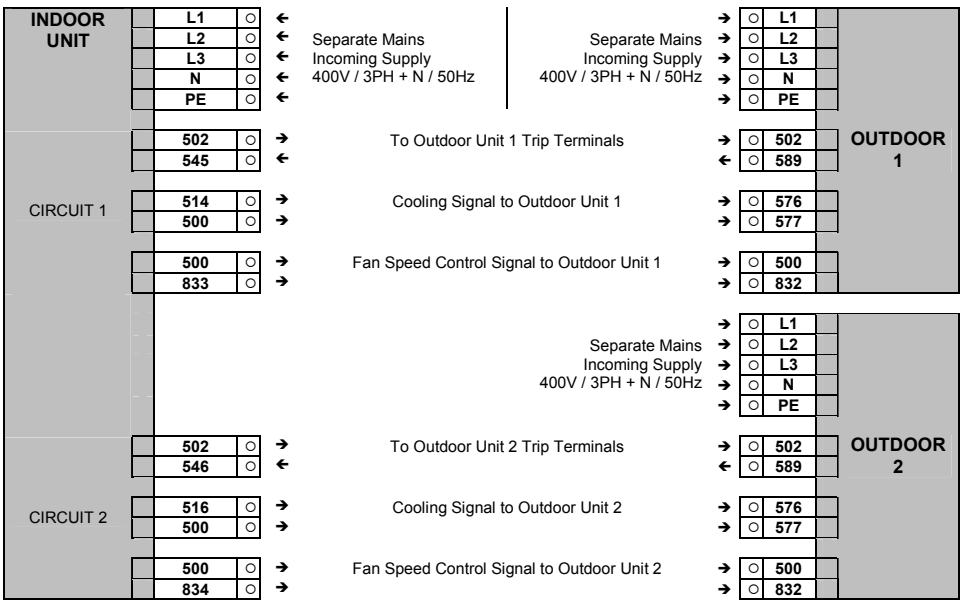
In line with IEE Wiring Regulations, the following should be observed:

- Extra low voltage control cables (ELV) and mains power cable should be segregated by a minimum distance of 50mm
- If cables must cross, it is recommended that they cross at right angles
- Airedale recommends that ELV cables are screened at one end to earthed enclosures

Design Data - Air Cooled Models

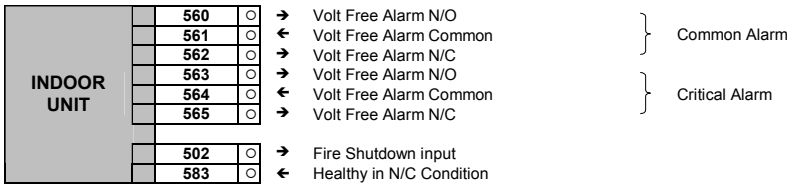
INTERCONNECTING WIRING - A MODELS

Head Pressure Control - Optional Intelligent Head Pressure Control(1)

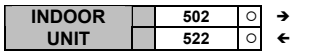


(1) Although models 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.

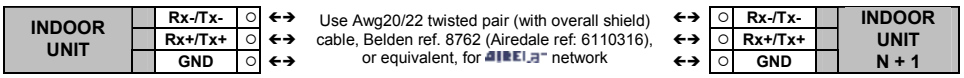
Indoor Controls Only



Remote On/Off



Run/Standby Network



CABLE INSTALLATION

In line with IEE Wiring Regulations, the following should be observed:

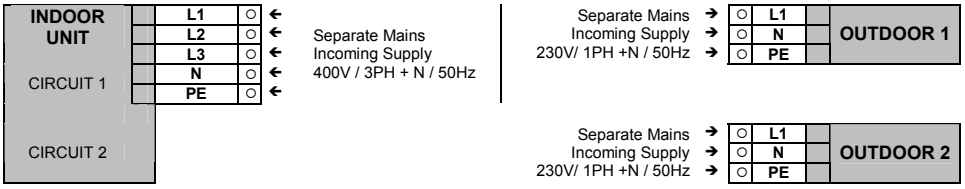
- Extra low voltage control cables (ELV) and mains power cable should be segregated by a minimum distance of 50mm
- If cables must cross, it is recommended that they cross at right angles
- Airedale recommends that ELV cables are screened at one end to earthed enclosures

Design Data - Air Cooled Models

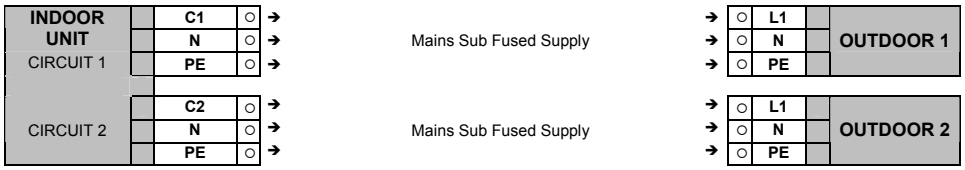
INTERCONNECTING WIRING - X MODELS

Head Pressure Control - Standard (Stand Alone)

No Sub Fusing

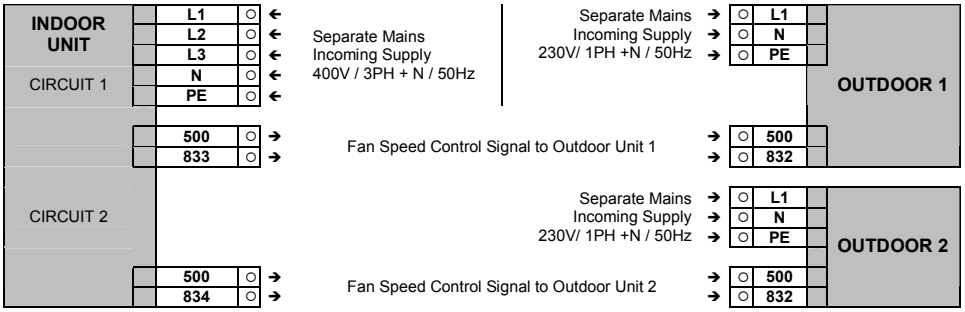


With Sub Fusing

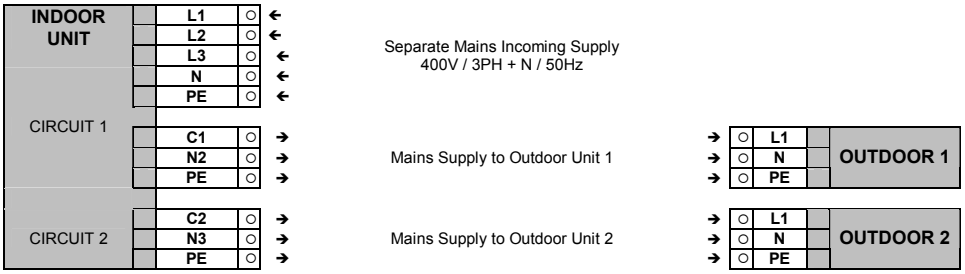


Head Pressure Control - Optional Intelligent Head Pressure Control

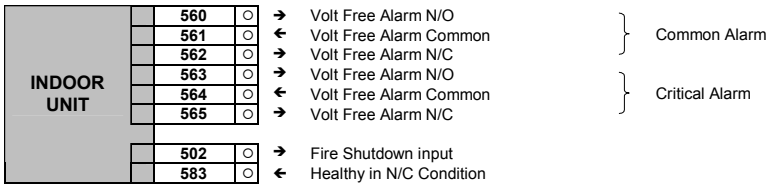
Fan Speed Control Fitted to Outdoor Unit (No Sub fusing available)



Fan Speed Control Fitted to Indoor Unit (With Sub Fusing supplied)



Indoor Controls Only



Remote On/Off

Run/Standby Network

INDOOR UNIT
Rx-/Tx-
Rx+/Tx+
GND
Use Awg20/22 twisted pair (with overall shield) cable, Belden ref. 8762 (Airedale ref: 6110316), or equivalent, for AIRELAN network
INDOOR UNIT N + 1

CABLE INSTALLATION

In line with IEE Wiring Regulations, the following should be observed:

- Extra low voltage control cables (ELV) and mains power cable should be segregated by a minimum distance of 50mm
- If cables must cross, it is recommended that they cross at right angles
- Airedale recommends that ELV cables are screened at one end to earthed enclosures

AIR COOLED

Performance Data - Chilled Water Models

COOLING DUTIES

Cooling Capacity (1)		Chilled Water Inlet/Outlet °C							
	Air On °C DB / % RH	5/10°C		7/12°C		8/14°C		10/16°C	
		TC (kW)	SC (kW)	TC (kW)	SC (kW)	TC (kW)	SC (kW)	TC (kW)	SC (kW)
V9CW	22 / 50	9.6	8.1	7.5	7.0	5.6	5.6	4.3	4.3
	24 / 45	10.8	9.2	8.9	8.3	7.0	7.0	5.6	5.6
	26 / 40	11.8	10.4	10.0	9.4	8.3	8.3	6.9	6.9
V13CW	22 / 50	12.2	10.5	9.8	9.1	7.5	7.5	5.6	5.6
	24 / 45	13.7	11.9	11.4	10.7	9.4	9.4	7.5	7.5
	26 / 40	15.1	13.5	12.7	12.1	10.9	10.9	9.3	9.3
V16CW	22 / 50	14.7	12.8	11.8	11.2	9.4	9.4	7.1	7.1
	24 / 45	16.5	14.6	13.6	13.0	11.4	11.4	9.5	9.5
	26 / 40	18.2	16.4	15.3	14.7	13.1	13.1	11.4	11.4
V19CW	22 / 50	21.3	18.3	17.2	15.9	12.8	12.8	9.4	9.4
	24 / 45	23.9	20.8	19.8	18.6	16.3	16.2	12.9	12.9
	26 / 40	26.3	23.5	22.2	21.1	19.1	19.0	16.0	16.0
V23CW	22 / 50	25.8	22.5	20.8	19.5	16.5	16.5	12.3	12.3
	24 / 45	29.0	25.6	24.0	22.8	20.2	20.2	16.6	16.6
	26 / 40	31.9	28.5	26.9	25.9	23.1	23.1	20.0	20.0
V25CW	22 / 50	30.6	26.0	24.7	22.8	20.1	19.9	15.0	15.0
	24 / 45	34.3	29.6	28.4	26.3	23.9	23.6	19.7	19.7
	26 / 40	37.6	33.2	31.8	30.0	27.4	27.2	23.3	23.3
V31CW	22 / 50	32.3	30.4	26.1	26.1	21.3	21.3	15.8	15.8
	24 / 45	36.7	34.9	30.5	30.5	26.8	26.8	22.5	22.5
	26 / 40	40.7	39.2	34.6	34.6	31.1	31.1	27.6	27.6
V35CW	22 / 50	51.0	43.1	41.3	37.7	33.4	32.3	24.5	24.5
	24 / 45	57.1	49.0	47.4	43.6	41.5	39.4	32.9	32.9
	26 / 40	62.6	54.9	53.0	49.5	47.4	45.4	40.1	40.1
V41CW	22 / 50	49.2	42.9	39.6	37.7	31.3	31.3	23.1	23.1
	24 / 45	55.3	48.9	45.8	43.6	39.6	38.9	32.0	32.0
	26 / 40	60.9	55.2	51.4	50.1	46.0	45.6	39.7	39.7
V45CW	22 / 50	53.7	47.5	43.2	41.5	35.3	35.3	26.3	26.3
	24 / 45	60.5	54.1	50.0	48.2	43.7	43.3	36.0	36.0
	26 / 40	66.6	60.9	56.2	55.0	50.3	50.1	43.8	43.8
V50CW	22 / 50	62.2	53.5	50.1	46.6	39.2	38.9	28.4	28.4
	24 / 45	69.8	60.9	57.8	54.4	49.8	48.3	39.6	39.6
	26 / 40	76.7	68.6	64.7	61.6	57.8	56.1	49.0	49.0
V55CW	22 / 50	73.1	61.6	59.2	53.9	49.4	47.1	36.3	36.3
	24 / 45	81.7	69.9	68.0	62.3	59.8	56.5	48.0	48.0
	26 / 40	89.5	78.3	75.8	70.7	68.0	64.9	57.7	57.7
V65CW	22 / 50	71.2	62.9	57.4	54.6	47.5	47.2	35.6	35.6
	24 / 45	80.2	71.7	66.3	63.9	58.1	57.0	48.3	48.3
	26 / 40	88.2	81.0	74.5	72.7	66.7	66.2	58.0	58.0
V80CW	22 / 50	89.5	77.0	72.2	67.1	59.3	58.2	43.7	43.7
	24 / 45	100.2	87.4	83.0	78.1	72.6	70.4	59.2	59.2
	26 / 40	110.1	98.5	92.9	88.5	83.0	81.5	71.4	71.4
V90CW	22 / 50	97.9	85.4	78.9	74.2	66.9	65.6	50.0	50.0
	24 / 45	110.1	97.2	91.1	85.7	79.6	77.2	66.5	66.5
	26 / 40	121.0	108.2	102.1	98.4	91.2	89.5	78.7	78.7
V95CW	22 / 50	105.5	89.5	85.2	78.3	69.0	67.0	49.4	49.4
	24 / 45	118.2	101.7	98.1	90.6	85.8	81.8	68.2	68.2
	26 / 40	129.6	114.0	109.6	102.8	98.0	94.2	83.4	83.4

TC = Total Cooling SC = Sensible Cooling

(1) Deduct fan motor gain for nett duties, refer to ***General Specification - Chilled Water Models***.
(2) Water flow rate (l/s) = TC ÷ (4.19 x ΔT) at 100% Water. For glycol use, refer to ***Design Data - Chilled Water Models***.
(3) For Waterside Pressure Drop, refer to ***Design Data - Chilled Water Models***.

OPERATING LIMITS

Cooling	
Indoor Air Temperature	+18°C to +26°C
Indoor RH%	+40% to +50%
Water Entering Temperature	+5°C to +16°C
Water Leaving Temperature	+10°C to +16°C

(1) Conditions quoted at 100% Water.
(2) For conditions outside those quoted, please refer to Airedale.

General Specification - Chilled Water Models

MECHANICAL DATA

			V9CW	V13CW	V16CW	V19CW
Capacity	(1)					
Nom Cooling (Gross)		kW	8.9	11.4	13.6	19.8
Fan Gain		kW	1 x 0.35	1 x 0.35	1 x 0.35	1 x 0.44
Dimensions - H x D x W	(2)	mm	1940 x 800 x 900	1940 x 800 x 900	1940 x 800 x 900	1940 x 800 x 1450
Weight - Machine	(2)	kg	251	256	256	332
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)			
Cooling Coil			Copper Tube/Turbulated Hydrophilic Coated Aluminium Fins			
Coating			Plain	Plain	Plain	Plain
Cooling/Dehum Stages			1 (Modulated)/1			
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP			
Motor / Filter Type			Direct / Standard	Direct / Standard	Direct / Standard	Direct / Standard
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 0.74
Speed @ 50Pa ESP		rpm	N/A	N/A	N/A	N/A
Maximum ESP		Pa	425	330	200	50
Speed @ Maximum ESP		rpm	N/A	N/A	N/A	N/A
Nominal Airflow		m³/s	0.65	0.87	1.09	1.50
Connections						
Inlet/Outlet		mm	28	28	28	35
Condensate Drain Hose		mm	19	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm			
Quantity			2	2	2	3
OPTIONAL EXTRAS						
Electric Heating		kW	7.5	15.0	15.0	15.0
Humidifier		kg/hr	0.6 - 3.0	0.6 - 3.0	0.6 - 3.0	1.6 - 8.0
Feed/Drain			3/4" BSPF Braided flexible hose/19mm hose connection			
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm			
Quantity			2 + 2	2 + 2	2 + 2	3 + 3
HE & Pre Filter Motor Selection						
Motor / Filter Type			Direct / HE	Direct / HE	Direct / HE	Belt / HE
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 1.10
Speed @ 25Pa ESP		rpm	N/A	N/A	N/A	575
Maximum ESP		Pa	385	240	30	175
Speed @ Maximum ESP		rpm	N/A	N/A	N/A	826
Fan Gain		kW	1 x 0.35	1 x 0.35	1 x 0.35	1 x 0.65
Larger Fan Motor Size	(3)					
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 0.75	1 x 0.75	1 x 1.10	1 x 1.10
Maximum ESP		Pa	545	425	420	205
Speed @ Maximum ESP		rpm	1257	1178	1262	865
Fan Gain		kW	1 x 0.44	1 x 0.44	1 x 0.65	1 x 0.65
Next Larger Fan Motor Size	(3)					
Motor / Filter Type			N/A	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	N/A	1 x 1.10	1 x 1.50	1 x 1.50
Maximum ESP		Pa	N/A	645	650	380
Speed @ Maximum ESP		rpm	N/A	1410	1491	1022
Fan Gain		kW	N/A	1 x 0.65	1 x 0.88	1 x 0.88
Condensate Pump						
Head		m	10.8	10.8	10.8	10.8
Flow		l/m	5	5	5	5
Drain			10mm S/Steel Stub Connection			
Low Pressure Hot Water			Copper Coil/Aluminium Fin			
Capacity Gross	(4)	kW	11	13	15	20
Water Flow (Nominal)		l/s	0.24	0.28	0.33	0.43
LPHW Connection Sizes		mm	22	22	22	22
Threaded Connections						
Brass Male Taper		in	1	1	1	1 1/4

(1) Entering air 24°C/45% RH ambient 35°C.
(2) **Refer to *Dimensional & Installation Data* Split case information.**
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Chilled Water Models***.

General Specification - Chilled Water Models

MECHANICAL DATA

			V23CW	V25CW	V31CW	V35CW
Capacity	(1)					
Nom Cooling (Gross)		kW	24.0	28.4	30.5	47.4
Fan Gain		kW	1 x 0.88	1 x 1.29	1 x 1.76	1 x 2.35
Dimensions - H x D x W	(2)	mm	1940 x 800 x 1450	1940 x 800 x 1450	1940 x 800 x 1450	1940 x 800 x 1450
Weight - Machine	(2)	kg	370	374	515	550
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)			
Cooling Coil			Copper Tube/Turbulated Aluminium Fins			
Coating			Plain	Plain	Plain	Plain
Cooling/Dehum Stages			1 (Modulated)/1			
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP			
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	1 x 1.50	1 x 2.20	1 x 3.00	1 x 4.00
Speed @ 50Pa ESP		rpm	790	872	953	1048
Maximum ESP		Pa	180	260	160	175
Speed @ Maximum ESP		rpm	932	1079	1045	1141
Nominal Airflow		m³/s	1.90	2.10	2.80	3.10
Connections						
Inlet/Outlet		mm	35	35	35	35
Condensate Drain Hose		mm	19	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm			
Quantity			3	3	3	3
OPTIONAL EXTRAS						
Electric Heating		kW	15.0	15.0	15.0	15.0
Humidifier		kg/hr	1.6 - 8.0	1.6 - 8.0	1.6 - 8.0	1.6 - 8.0
Feed/Drain			3/4" BSPF Braided flexible hose/19mm hose connection			
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm			
Quantity			3 + 3	3 + 3	3 + 3	N/A
HE & Pre Filter Motor Selection						
Motor / Filter Type			Belt / HE	Belt / HE	Belt / HE	N/A
Quantity / Motor Size		kW	1 x 1.50	1 x 2.20	1 x 4.00	N/A
Speed @ 25Pa ESP		rpm	898	997	1091	N/A
Maximum ESP		Pa	80	140	240	N/A
Speed @ Maximum ESP		rpm	930	1082	1240	N/A
Fan Gain		kW	1 x 0.88	1 x 1.29	1 x 2.35	N/A
Larger Fan Motor Size	(3)					
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	N/A
Quantity / Motor Size		kW	1 x 2.20	1 x 3.00	1 x 4.00	N/A
Maximum ESP		Pa	395	475	410	N/A
Speed @ Maximum ESP		rpm	1143	1265	1242	N/A
Fan Gain		kW	1 x 1.29	1 x1.76	1 x 2.35	N/A
Next Larger Fan Motor Size	(3)					
Motor / Filter Type			Belt / Standard	N/A	N/A	N/A
Quantity / Motor Size		kW	1 x 3.00	N/A	N/A	N/A
Maximum ESP		Pa	560	N/A	N/A	N/A
Speed @ Maximum ESP		rpm	1284	N/A	N/A	N/A
Fan Gain		kW	1 x 1.76	N/A	N/A	N/A
Condensate Pump						
Head		m	10.8	10.8	10.8	10.8
Flow		l/m	5	5	5	5
Drain			10mm S/Steel Stub Connection			
Low Pressure Hot Water			Copper Coil/Aluminium Fin			
Capacity Gross	(4)	kW	23	24	15	16
Water Flow (Nominal)		l/s	0.50	0.52	0.33	0.35
LPHW Connection Sizes		mm	22	22	22	22
Threaded Connections						
Brass Male Taper		in	1 1/4	1 1/4	1 1/4	1 1/4

(1) Entering air 24°C/45% RH ambient 35°C.
(2) **Refer to *Dimensional & Installation Data* Split case information.**
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Chilled Water Models***.

General Specification - Chilled Water Models

MECHANICAL DATA

			V41CW	V45CW	V50CW	V55CW
Capacity	(1)					
Nom Cooling (Gross)		kW	45.8	50.0	57.8	68.0
Fan Gain		kW	2 x 1.29	2 x 1.29	2 x 1.29	2 x 1.76
Dimensions - H x D x W	(2)	mm	1940 x 800 x 2000	1940 x 800 x 2000	1940 x 800 x 2000	1940 x 800 x 2000
Weight - Machine	(2)	kg	542	568	557	576
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)			
Cooling Coil			Copper Tube/Turbulated Aluminium Fins			
Coating			Plain	Plain	Plain	Plain
Cooling/Dehum Stages			1 (Modulated)/1			
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP			
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	2 x 2.20	2 x 2.20	2 x 2.20	2 x 3.00
Speed @ 50Pa ESP		rpm	913	1016	1069	1175
Maximum ESP		Pa	380	175	65	90
Speed @ Maximum ESP		rpm	1212	1126	1082	1206
Nominal Airflow		m³/s	3.40	3.80	4.00	4.40
Connections						
Inlet/Outlet		mm	42	42	54	54
Condensate Drain Hose		mm	19	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm			
Quantity			4	4	4	4
OPTIONAL EXTRAS						
Electric Heating		kW	15.0	15.0	22.5	22.5
Humidifier		kg/hr	3.0 - 15.0	3.0 - 15.0	3.0 - 15.0	3.0 - 15.0
Feed/Drain			3/4" BSPF Braided flexible hose/19mm hose connection			
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm			
Quantity			4 + 4	4 + 4	4 + 4	N/A
HE & Pre Filter Motor Selection						
Motor / Filter Type			Belt / HE	Belt / HE	Belt / HE	N/A
Quantity / Motor Size		kW	2 x 2.20	2 x 3.00	2 x 3.00	N/A
Speed @ 25Pa ESP		rpm	1044	1202	1282	N/A
Maximum ESP		Pa	245	235	70	N/A
Speed @ Maximum ESP		rpm	1214	1340	1296	N/A
Fan Gain		kW	2 x 1.29	2 x 1.76	2 x 1.76	N/A
Larger Fan Motor Size	(3)					
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	2 x 3.00	2 x 3.00	2 x 3.00	2 x 4.00
Maximum ESP		Pa	675	450	335	405
Speed @ Maximum ESP		rpm	1422	1339	1296	1422
Fan Gain		kW	2 x 1.76	1.76	2 x 1.76	2 x 2.35
Next Larger Fan Motor Size	(3)					
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	N/A
Quantity / Motor Size		kW	2 x 4.00	2 x 4.00	2 x 4.00	N/A
Maximum ESP		Pa	1055	795	665	N/A
Speed @ Maximum ESP		rpm	1591	1528	1496	N/A
Fan Gain		kW	2 x 2.35	2 x 2.35	2 x 2.35	N/A
Condensate Pump						
Head		m	10.8	10.8	10.8	10.8
Flow		l/m	5	5	5	5
Drain			10mm S/Steel Stub Connection			
Low Pressure Hot Water			Copper Coil/Aluminium Fin			
Capacity Gross	(4)	kW	20	22	22	24
Water Flow (Nominal)		l/s	0.43	0.48	0.48	0.52
LPHW Connection Sizes		mm	22	22	22	22
Threaded Connections						
Brass Male Taper		in	1 1/2	1 1/2	2	2

(1) Entering air 24°C/45% RH ambient 35°C.
(2) **Refer to *Dimensional & Installation Data* Split case information.**
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Chilled Water Models***.

General Specification - Chilled Water Models

MECHANICAL DATA

			V65CW	V80CW	V90CW	V95CW
Capacity	(1)					
Nom Cooling (Gross)		kW	66.3	83.0	91.1	98.1
Fan Gain		kW	2 x 1.76	2 x 2.35	2 x 3.24	2 x 3.24
Dimensions - H x D x W	(2)	mm	1940 x 800 x 2550	1940 x 800 x 2550	1940 x 800 x 2550	1940 x 800 x 2550
Weight - Machine	(2)	kg	635	659	686	704
Construction - Material / Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)			
Cooling Coil			Copper Tube/Turbulated Coated Aluminium Fins			
Coating			Plain	Plain	Plain	Hydrophilic
Cooling/Dehum Stages			1 (Modulated)/1			
Fan & Motor	(3)		Centrifugal - Designed to 50Pa ESP			
Motor / Filter Type			Belt / Standard	Belt / Standard	Belt / Standard	Belt / Standard
Quantity / Motor Size		kW	2 x 3.0	2 x 4.0	2 x 5.5	2 x 5.5
Speed @ 50Pa ESP		rpm	945	1089	1216	1216
Maximum ESP		Pa	275	205	145	145
Speed @ Maximum ESP		rpm	1142	1209	1284	1284
Nominal Airflow		m³/s	5.0	5.8	6.5	6.5
Connections						
Inlet/Outlet		mm	54	54	54	54
Condensate Drain Hose		mm	19	19	19	19
Filtration			Disposable to BS EN 779 - G4 - 97mm			
Quantity			6	6	6	6
OPTIONAL EXTRAS						
Electric Heating		kW	22.5	30.0	30.0	30.0
Humidifier		kg/hr	3.0 - 15.0	3.0 - 15.0	3.0 - 15.0	3.0 - 15.0
Feed/Drain			3/4" BSPF Braided flexible hose/19mm hose connection			
HE & Pre Filters			Disposable to BS EN 779 - F6 - 97mm + Disposable to BS EN 779 - G3 - 22mm			
Quantity			6 + 6	6 + 6	N/A	N/A
HE & Pre Filter Motor Selection						
Motor / Filter Type			Belt / HE	Belt / HE	N/A	N/A
Quantity / Motor Size		kW	2 x 3.00	2 x 5.50	N/A	N/A
Speed @ 25Pa ESP		rpm	1105	1231	N/A	N/A
Maximum ESP		Pa	95	120	N/A	N/A
Speed @ Maximum ESP		rpm	1143	1284	N/A	N/A
Fan Gain		kW	2 x 1.76	2 x 3.24	N/A	N/A
Larger Fan Motor Size	(3)					
Motor / Filter Type			Belt / Standard	Belt / Standard	N/A	N/A
Quantity / Motor Size		kW	2 x 4.00	2 x 5.50	N/A	N/A
Maximum ESP		Pa	450	300	N/A	N/A
Speed @ Maximum ESP		rpm	1283	1280	N/A	N/A
Fan Gain		kW	2 x 2.35	2 x 3.24	N/A	N/A
Next Larger Fan Motor Size	(3)					
Motor / Filter Type			N/A	N/A	N/A	N/A
Quantity / Motor Size		kW	N/A	N/A	N/A	N/A
Maximum ESP		Pa	N/A	N/A	N/A	N/A
Speed @ Maximum ESP		rpm	N/A	N/A	N/A	N/A
Fan Gain		kW	N/A	N/A	N/A	N/A
Condensate Pump						
Head		m	10.8	10.8	10.8	10.8
Flow		l/m	5	5	5	5
Drain			10mm S/Steel Stub Connection			
Low Pressure Hot Water			Copper Coil/Aluminium Fin			
Capacity Gross	(4)	kW	29	32	34	34
Water Flow (Nominal)		l/s	0.63	0.69	0.74	0.74
LPHW Connection Sizes		mm	22	22	22	22
Threaded Connections						
Brass Male Taper		in	2	2	2	2

(1) Entering air 24°C/45% RH ambient 35°C.
(2) **Refer to *Dimensional & Installation Data* Split case information.**
(3) Based on standard front return air and grilles. HE & Pre filters may alter the motor selection, see Optional Extras or contact Airedale for details.
(4) Based upon low pressure hot water 82°C inlet/71°C outlet. Air on 20°C. Refer to ***Design Data - Chilled Water Models***.

General Specification - Chilled Water Models

ELECTRICAL DATA

			V9CW	V13CW	V16CW	V19CW
Unit Data	(1)					
Nominal Run Amps		A	24.2	35.1	35.1	40.3
Maximum Start Amps		A	15.3	35.1	35.1	40.3
Recommended Mains Fuse Size		A	32	40	40	50
Max Mains Incoming Cable Size		mm²	35	35	35	35
Mains Supply	(2)	V		400V / 3PH + N / 50Hz		
Control circuit		VAC	24	24	24	24
Evaporator Fan - Per Fan						
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 0.74
Full Load Amps		A	6.60	6.60	6.60	7.60
Locked Rotor Amps		A	16.50	16.50	16.50	19.00
OPTIONAL EXTRAS						
Electric Heating						
Stage of Reheat			1	2	2	2
Number of Elements			3	6	6	6
Rating (Total)		kW	7.5	15.0	15.0	15.0
Current Per Phase		A	10.9	21.8	21.8	21.8
Humidifier						
Capacity		kg	0.60 - 3.00	0.60 - 3.00	0.60 - 3.00	1.60 - 8.00
Rating		kW	2.25	2.25	2.25	6.00
Full Load Amps		A	3.50	3.50	3.50	8.70
HE & Pre Filter Motor Selection						
Quantity / Motor Size		kW	1 x 0.60	1 x 0.60	1 x 0.60	1 x 1.10
Full Load Amps		A	6.60	6.60	6.60	2.53
Locked Rotor Amps		A	16.50	16.50	16.50	16.20
Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	1 x 0.75	1 x 0.75	1 x 1.10	1 x 1.10
Full Load Amps		A	1.78	1.78	2.53	2.53
Locked Rotor Amps		A	11.40	11.40	16.20	16.20
Next Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	N/A	1 x 1.10	1 x 1.50	1 x 1.50
Full Load Amps		A	N/A	2.53	3.39	3.39
Locked Rotor Amps		A	N/A	16.20	23.10	23.10

			V23CW	V25CW	V31CW	V35CW
Unit Data	(1)					
Nominal Run Amps		A	34.4	35.7	37.2	46.2
Maximum Start Amps		A	34.4	35.7	43.8	61.4
Recommended Mains Fuse Size		A	40	40	50	50
Max Mains Incoming Cable Size		mm²	35	35	35	35
Mains Supply	(2)	V		400V / 3PH + N / 50Hz		
Control circuit		VAC	24	24	24	24
Evaporator Fan - Per Fan						
Quantity / Motor Size		kW	1 x 1.5	1 x 2.2	1 x 3.0	1 x 4.0
Full Load Amps		A	3.39	4.64	6.18	8.12
Locked Rotor Amps		A	23.1	32.5	43.3	60.9
OPTIONAL EXTRAS						
Electric Heating						
Stage of Reheat			2	2	2	2
Number of Elements			6	6	6	6
Rating (Total)		kW	15.0	15.0	15.0	15.0
Current Per Phase		A	21.8	21.8	21.8	21.8
Humidifier						
Capacity		kg	1.6 - 8.0	1.6 - 8.0	1.6 - 8.0	1.6 - 8.0
Rating		kW	6.0	6.0	6.0	6.0
Full Load Amps		A	8.7	8.7	8.7	8.7
HE & Pre Filter Motor Selection						
Quantity / Motor Size		kW	1 x 1.5	1 x 2.2	1 x 4.0	N/A
Full Load Amps		A	3.39	4.64	8.12	N/A
Locked Rotor Amps		A	23.1	32.5	60.9	N/A
Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	1 x 2.2	1 x 3.0	1 x 4.0	N/A
Full Load Amps		A	4.64	6.18	8.12	N/A
Locked Rotor Amps		A	32.5	43.3	60.9	N/A
Next Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	1 x 3.0	N/A	N/A	N/A
Full Load Amps		A	6.18	N/A	N/A	N/A
Locked Rotor Amps		A	43.3	N/A	N/A	N/A

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.

(2) Although sizes 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.

General Specification - Chilled Water Models

ELECTRICAL DATA

			V41CW	V45CW	V50CW	V55CW
Unit Data	(1)					
Nominal Run Amps		A	47.4	47.4	58.3	61.4
Maximum Start Amps		A	65.5	65.5	65.5	87.1
Recommended Mains Fuse Size		A	63	63	63	80
Max Mains Incoming Cable Size		mm²	35	35	35	35
Mains Supply	(2)	V		400V / 3PH + N / 50Hz		
Control circuit		VAC	24	24	24	24
Evaporator Fan - Per Fan						
Quantity / Motor Size		kW	2 x 2.2	2 x 2.2	2 x 2.2	2 x 3.0
Full Load Amps		A	4.64	4.64	4.64	6.18
Locked Rotor Amps		A	32.5	32.5	32.5	43.3
OPTIONAL EXTRAS						
Electric Heating						
Stage of Reheat			2	2	3	3
Number of Elements			6	6	9	9
Rating (Total)		kW	15.0	15.0	22.5	22.5
Current Per Phase		A	21.8	21.8	21.8	21.8
Humidifier						
Capacity		kg	3.00 - 15.00	3.00 - 15.00	3.00 - 15.00	3.00 - 15.00
Rating		kW	11.25	11.25	11.25	11.25
Full Load Amps		A	15.80	15.80	15.80	15.80
HE & Pre Filter Motor Selection						
Quantity / Motor Size		kW	2 x 2.2	2 x 3.0	2 x 3.0	N/A
Full Load Amps		A	4.64	6.18	6.18	N/A
Locked Rotor Amps		A	32.5	43.3	43.3	N/A
Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	2 x 3.0	2 x 3.0	2 x 3.0	2 x 4.0
Full Load Amps		A	6.18	6.18	6.18	8.12
Locked Rotor Amps		A	43.3	43.3	43.3	60.9
Next Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	2 x 4.0	2 x 4.0	2 x 4.0	N/A
Full Load Amps		A	8.12	8.12	8.12	N/A
Locked Rotor Amps		A	60.9	60.9	60.9	N/A

			V65CW	V80CW	V90CW	V95CW
Unit Data	(1)					
Nominal Run Amps		A	61.4	76.14	81.7	81.7
Maximum Start Amps		A	87.1	122.3	140.1	140.1
Recommended Mains Fuse Size		A	80	100	100	100
Max Mains Incoming Cable Size		mm²	35	50	50	50
Mains Supply	(2)	V		400V / 3PH + N / 50Hz		
Control circuit		VAC	24	24	24	24
Evaporator Fan - Per Fan						
Quantity / Motor Size		kW	2 x 3.0	2 x 4.0	2 x 5.5	2 x 5.5
Full Load Amps		A	6.18	8.12	10.9	10.9
Locked Rotor Amps		A	43.3	60.9	69.8	69.8
OPTIONAL EXTRAS						
Electric Heating						
Stage of Reheat			3	3	3	3
Number of Elements			9	12	12	12
Rating (Total)		kW	22.5	30.0	30.0	30.0
Current Per Phase		A	32.7	43.5	43.5	43.5
Humidifier						
Capacity		kg	3.00 - 15.00	3.00 - 15.00	3.00 - 15.00	3.00 - 15.00
Rating		kW	11.25	11.25	11.25	11.25
Full Load Amps		A	15.80	15.80	15.80	15.80
HE & Pre Filter Motor Selection						
Quantity / Motor Size		kW	2 x 3.0	2 x 5.5	N/A	N/A
Full Load Amps		A	6.18	10.9	N/A	N/A
Locked Rotor Amps		A	43.3	69.8	N/A	N/A
Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	2 x 4.0	2 x 5.5	N/A	N/A
Full Load Amps		A	8.12	10.9	N/A	N/A
Locked Rotor Amps		A	60.9	69.8	N/A	N/A
Next Larger Fan Motor - Per Fan						
Quantity / Motor Size		kW	N/A	N/A	N/A	N/A
Full Load Amps		A	N/A	N/A	N/A	N/A
Locked Rotor Amps		A	N/A	N/A	N/A	N/A

(1) Values given for full function units (incl. electric heating and humidification) at ARI conditions with EFF1 (IE2) fan motors and standard filters, for optional data, please contact Airedale.

(2) Although sizes 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.

Sound Data - Chilled Water Models

Front Return Air

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V9CW	D A	70	62	64	70	70	64	57	56	48
	R A	51	64	61	51	47	44	41	34	20
	C B	51	64	61	51	47	44	41	34	20
	S @ 3m	36	50	46	37	32	30	26	19	5
V13CW	D A	76	68	70	76	75	70	63	61	54
	R A	57	70	66	57	52	50	46	39	25
	C B	57	70	66	57	52	50	46	39	25
	S @ 3m	42	55	52	42	38	35	32	25	11
V16CW	D A	81	73	75	81	81	75	68	67	59
	R A	62	75	72	62	58	55	52	45	31
	C B	62	75	72	62	58	55	52	45	31
	S @ 3m	47	61	57	48	43	41	37	30	16
V19CW	D A	86	73	79	81	83	81	77	75	69
	R A	60	73	69	60	55	53	49	42	28
	C B	60	73	69	60	55	53	49	42	28
	S @ 3m	45	58	55	45	41	38	35	28	14
V23CW	D A	81	74	78	76	77	76	74	72	67
	R A	63	76	73	61	57	58	54	50	48
	C B	63	76	73	61	57	58	54	50	48
	S @ 3m	49	62	59	47	42	43	40	36	34
V25CW	D A	85	75	81	79	81	79	78	78	72
	R A	67	77	76	64	61	60	58	56	53
	C B	67	77	76	64	61	60	58	56	53
	S @ 3m	52	62	62	50	46	46	44	42	39
V31CW	D A	83	76	79	77	79	78	75	73	68
	R A	65	78	75	63	58	59	56	52	50
	C B	65	78	75	63	58	59	55	51	50
	S @ 3m	50	63	60	48	44	45	41	37	35
V35CW	D A	92	78	87	84	89	85	85	85	80
	R A	73	80	82	69	68	66	65	64	62
	C B	73	80	82	69	68	66	65	64	62
	S @ 3m	59	66	67	55	54	52	50	49	47

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V41CW	D A	80	81	81	76	78	75	72	70	64
	R A	74	85	82	72	68	69	66	63	61
	C B	74	85	82	72	68	69	66	63	61
	S @ 3m	60	70	67	57	54	54	52	49	46
V45CW	D A	84	84	86	79	80	77	76	76	69
	R A	78	88	87	75	71	70	70	69	66
	C B	78	88	87	75	71	70	70	69	66
	S @ 3m	63	73	72	60	56	55	55	55	51
V50CW	D A	84	84	85	80	81	79	76	74	68
	R A	78	88	85	75	72	72	70	67	64
	C B	78	88	85	75	72	72	70	67	64
	S @ 3m	63	74	71	61	57	58	55	52	50
V55CW	D A	87	84	90	83	83	80	78	79	73
	R A	81	88	91	78	74	73	72	72	70
	C B	81	88	91	78	74	73	72	72	70
	S @ 3m	66	74	77	64	59	58	58	58	55
V65CW	D A	83	89	84	81	79	78	75	72	66
	R A	74	86	82	74	69	68	65	61	54
	C B	74	86	82	74	69	68	65	61	54
	S @ 3m	59	71	68	59	54	54	50	46	40
V80CW	D A	86	93	87	84	82	81	79	75	69
	R A	77	89	86	77	72	72	68	64	58
	C B	77	89	86	77	72	72	68	64	58
	S @ 3m	63	75	71	62	58	57	54	49	43
V90CW	D A	89	95	90	86	85	84	81	78	72
	R A	80	92	88	79	75	74	71	66	60
	C B	80	92	88	79	75	74	71	66	60
	S @ 3m	65	77	74	65	60	60	56	52	46
V95CW	D A	89	95	90	86	85	84	81	78	72
	R A	80	92	88	79	75	74	71	66	60
	C B	80	92	88	79	75	74	71	66	60
	S @ 3m	65	77	74	65	60	60	56	52	46

Key: D A = Discharge Air Sound Power
R A = Return Air Sound Power
C B = Case Breakout Sound Power
S @ 3m = Sound Pressure at 3m

(1) dB(A) is the overall sound level, measured on the A scale.
(2) All sound data measured at nominal conditions.
(3) Refer to ***Sound Measurement Method***.

The Sound Pressure data quoted is only valid where the unit is installed on a solid floor (Front and Rear return air only) or false floor (Base return air only) and against a rear wall. If the equipment is placed adjacent to any other vertical reflective walls, values may vary to those stated, typically increasing by 3dB for each side added. Values stated do not include for room reverberation conditions.

CHILLED WATER

Sound Data - Chilled Water Models

Rear & Base Return Air (Base Return Air Available on Sizes 19 - 95 Only)

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V9CW	D A	70	62	64	70	70	64	57	56	48
	R A	58	64	63	58	54	53	49	44	40
	C B	48	62	57	51	45	40	35	26	19
	S @ 3m	34	48	42	37	31	26	20	11	4
V13CW	D A	76	68	70	76	75	70	63	61	54
	R A	64	70	69	64	60	59	55	50	46
	C B	54	68	63	57	51	46	40	32	25
	S @ 3m	39	53	48	43	36	32	26	17	10
V16CW	D A	81	73	75	81	81	75	68	67	59
	R A	69	75	74	69	65	64	60	55	51
	C B	59	73	68	62	56	51	46	37	30
	S @ 3m	45	59	53	48	42	37	31	22	15
V19CW	D A	79	71	73	79	78	73	66	64	57
	R A	68	73	73	68	64	63	59	54	50
	C B	58	71	67	61	55	50	44	36	29
	S @ 3m	43	56	52	47	40	36	30	21	14
V23CW	D A	81	74	78	76	77	76	74	72	67
	R A	73	78	79	71	68	68	66	61	54
	C B	62	72	72	62	59	56	52	45	34
	S @ 3m	48	57	57	48	44	41	37	30	20
V25CW	D A	85	75	81	79	81	79	78	78	72
	R A	77	78	82	75	72	70	70	67	60
	C B	65	72	75	66	62	58	56	51	40
	S @ 3m	51	58	60	51	48	44	42	37	25
V31CW	D A	83	76	79	77	79	78	75	73	68
	R A	74	79	81	73	70	69	67	63	56
	C B	64	73	73	64	60	57	53	46	36
	S @ 3m	49	59	59	49	45	43	39	32	21
V35CW	D A	92	78	87	84	89	85	85	85	80
	R A	83	82	88	79	80	76	76	75	68
	C B	72	76	81	70	70	64	63	59	48
	S @ 3m	57	61	66	56	55	50	48	44	34

	Sound Measurement	Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
V41CW	D A	80	81	81	76	78	75	72	70	64
	R A	75	78	81	72	72	70	65	62	55
	C B	65	73	74	65	62	59	53	50	41
	S @ 3m	51	58	60	50	48	45	39	35	27
V45CW	D A	84	84	86	79	80	77	76	76	69
	R A	78	80	86	75	74	71	69	68	61
	C B	68	76	80	68	65	61	57	56	46
	S @ 3m	54	61	65	53	50	46	42	41	32
V50CW	D A	84	84	85	80	81	79	76	74	68
	R A	78	81	85	76	75	74	69	66	59
	C B	69	76	78	68	66	63	57	53	45
	S @ 3m	54	62	63	54	51	48	42	39	30
V55CW	D A	87	84	90	83	83	80	78	79	73
	R A	81	81	90	79	77	74	71	71	64
	C B	72	76	84	71	68	64	59	59	50
	S @ 3m	57	62	69	57	53	49	45	44	36
V65CW	D A	83	89	84	81	79	78	75	72	66
	R A	75	83	81	73	71	69	66	62	54
	C B	69	81	78	71	64	63	60	54	45
	S @ 3m	55	66	64	57	50	49	45	39	31
V80CW	D A	86	93	87	84	82	81	79	75	69
	R A	78	86	85	76	74	73	69	65	57
	C B	73	84	81	74	68	67	63	57	48
	S @ 3m	58	70	67	60	53	52	48	42	34
V90CW	D A	89	95	90	86	85	84	81	78	72
	R A	80	88	87	78	77	75	71	68	60
	C B	75	87	84	77	70	69	65	59	51
	S @ 3m	61	72	69	62	56	55	51	45	36
V95CW	D A	89	95	90	86	85	84	81	78	72
	R A	80	88	87	78	77	75	71	68	60
	C B	75	87	84	77	70	69	65	59	51
	S @ 3m	61	72	69	62	56	55	51	45	36

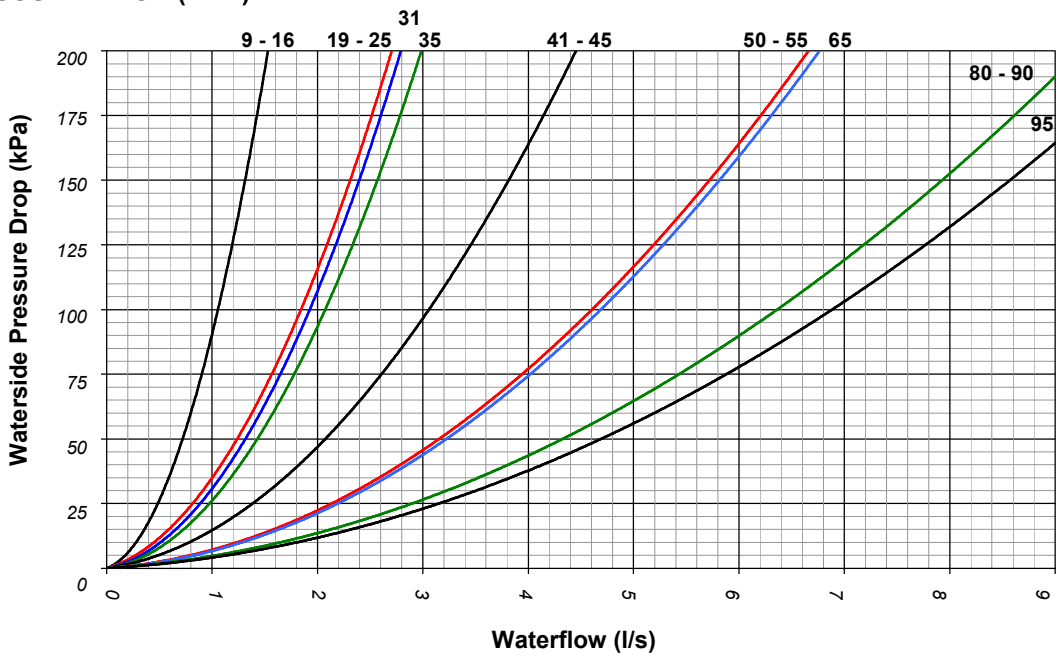
Key:
D A = Discharge Air Sound Power
R A = Return Air Sound Power
C B = Case Breakout Sound Power
S @ 3m = Sound Pressure at 3m

(1) dB(A) is the overall sound level, measured on the A scale.
(2) All sound data measured at nominal conditions.
(3) Refer to ***Sound Measurement Method***.

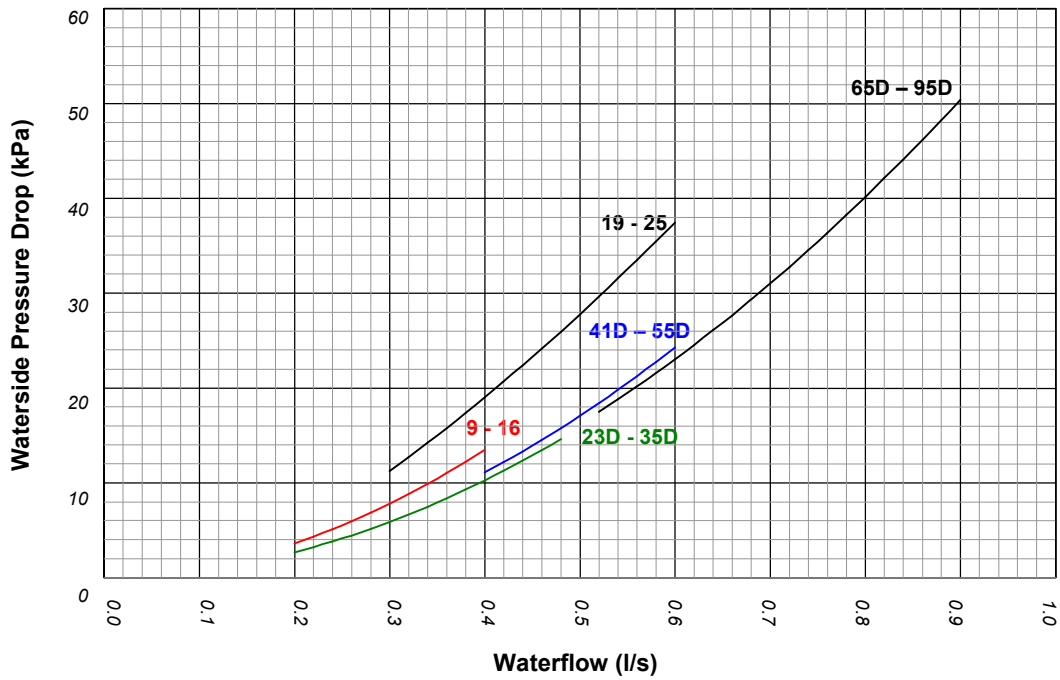
The Sound Pressure data quoted is only valid where the unit is installed on a solid floor (Front and Rear return air only) or false floor (Base return air only) and against a rear wall. If the equipment is placed adjacent to any other vertical reflective walls, values may vary to those stated, typically increasing by 3dB for each side added. Values stated do not include for room reverberation conditions.

Design Data - Chilled Water Models

WATERSIDE PRESSURE DROP (KPA)



LOW PRESSURE HOT WATER (OPTIONAL EXTRA)



(1) Includes coil, 3 port valve and pipework.

(2) To calculate 3 port valve pressure drop:

ΔP valve = $\left(\frac{Q}{M}\right)^2$ where ΔP = Pressure Drop in kPa, Q = Water Flow Rate in l/s and M = $\left(\frac{Kv}{36}\right)$

(3) Fluid 100% water, for glycol use, refer to ***Ethylene Glycol Correction Factors***.

M Values

Model Sizes	9 - 16	19 - 35	41 - 45	50 - 65	80 - 95
Chilled Water Valve	0.17	0.28	0.44	0.69	1.11
LPHW	0.17	0.17	0.17	0.17	0.17

Design Data - Chilled Water Models

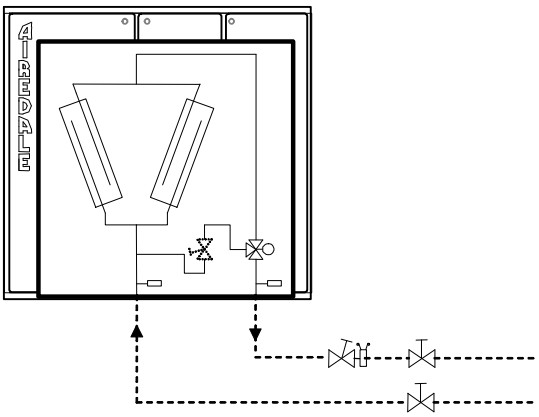
SYSTEM PIPEWORK SCHEMATIC

Design should be in accordance with good refrigeration practice to ensure good oil return to the compressor under all normal operating conditions to prolong the life of your unit.

Key:

- Bypass Regulating Valve (Optional)
- 3 Port Modulating Valve
- Binder Test Point
- Regulating Valve/Metering Station (Supplied by Others)
- Supply Flow
- Return Flow
- Shut Off Valve (Supplied By Others)
- Customer Water Supply

CW MODELS



Design Data - Chilled Water Models

ETHYLENE GLYCOL CORRECTION FACTORS

For conditions outside those quoted, please refer to Airedale.

The Use of Glycol

Glycol is recommended when a supply water temperature of +5°C or below is required or when static water can be exposed to freezing temperatures.

The effect of glycol in the system has a direct effect upon the Cooling Duty, the Design Flow Rate and the unit Pressure Drop.

To approximate the effect of glycol on unit performance, the following correction factors when applied can be used as a guide.

Where:

Q = Total Cooling Capacity (TC) (kW)

Qw = Equivalent Water Cooling Capacity (kW), refer to ***Performance Data - Chilled Water Models***.

$\dot{V}$ = Corrected Flow Rate.

ΔT = Temperature difference between Water/Glycol Inlet/Outlet (°C).

ΔP = Maximum Water/ Glycol Pressure Drop for the indoor unit (kPa).

ΔP_W = Equivalent Water Pressure Drop for indoor unit (kPa), use the corrected flow rate $\dot{V}$. Refer to ***Design Data - Chilled Water Models***.

						Ethylene Glycol (Volume) / Freezing Point °C			
						10% / -4°C	20% / -9°C	30% / -15°C	40% / -23°C
Q	Corrected Cooling Duty	=	Qw	Cooling Capacity	x by	0.980	0.940	0.890	0.830
$\dot{V}$	Corrected Flow Rate	=	Qw/ΔT	Flow Rate		0.242	0.248	0.252	0.251
ΔP	Corrected Pressure Drop	=	ΔP_W	Pressure Drop		1.041	1.083	1.133	1.200

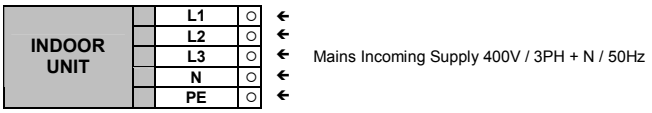
Example: **V50CW operating at 7/12, 24°C/45% RH Ambient, 20% Ethylene Glycol**

						Ethylene Glycol (Volume) / Freezing Point °C			
						10% / -4°C	**20% / -9°C**	30% / -15°C	40% / -23°C
Q	**54.33 kW**	=	Qw	57.8 kW	x by	0.980	**0.940**	0.890	0.830
$\dot{V}$	**2.86 l/s**	=	Qw/ΔT (12 - 7 = 5ΔT) =	11.56		0.242	**0.248**	0.252	0.251
ΔP	**45.49 kPa**	=	ΔP_W	42 kPa		1.041	**1.083**	1.133	1.200

Design Data - Chilled Water Models

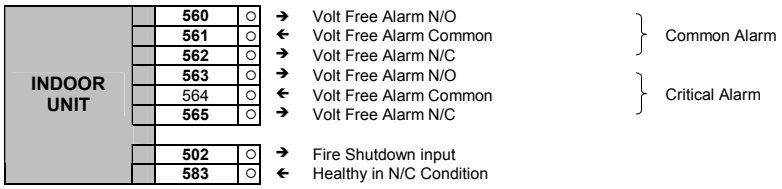
INTERCONNECTING WIRING

(1)

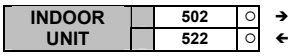


(1) Although models 9 - 19 are 230V/1/50Hz, a 400/3/50Hz supply is recommended to accommodate 3ph options, contact Airedale for details.

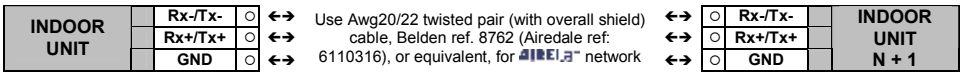
Indoor Controls Only



Remote On/Off



Run/Standby Network



CABLE INSTALLATION

In line with IEE Wiring Regulations, the following should be observed:

- Extra low voltage control cables (ELV) and mains power cable should be segregated by a minimum distance of 50mm
- If cables must cross, it is recommended that they cross at right angles
- Airedale recommends that ELV cables are screened at one end to earthed enclosures

General Description

UNIT IDENTIFICATION

AIR COOLED CONDENSING UNITS		AIR COOLED CONDENSERS	
CUS	Condensing Units	**C..HI**	Condensers
3 - 30	Model Size	**11 - 50**	Model Size
D	Dual Circuit	**H**	Head Pressure Control
		I	Mains Isolator
		-H	Horizontal Air Discharge
		-V	Vertical Air Discharge
Eg:	**CUS5**	**Eg:**	**C15HI-H**

INTRODUCTION

The range is custom designed for a small footprint, low sound level, slimline and aesthetically pleasing appearance for use with Airedale's comprehensive range of Precision air conditioning units.

CE DIRECTIVE

CE Airedale certify that the equipment detailed in this manual conforms with the following EC Directives:

Electromagnetic Compatibility Directive (EMC)	**2004/108/EC**
Low Voltage Directive (LVD)	**2006/95/EC**
Machinery Directive (MD)	**89/392/EC in the version 2006/42/EC**
Pressure Equipment Directive (PED)	**97/23/EC**

To comply with these directives appropriate national & harmonised standards have been applied. These are listed on the Declaration of Conformity, supplied with each product.

STANDARD FEATURES

Construction

Unit cabinets are manufactured from galvanised sheet steel coated with epoxy baked powder paint to provide a durable and weatherproof finish.

Standard unit colour is Light Grey (RAL 7035).

CUS30D

The base is fabricated from galvanised steel to ensure a tough, durable, weatherproof construction.

Condenser

Large surface area coil(s) ideally positioned to optimise airflow and heat transfer, manufactured from refrigeration quality copper tubes with mechanically bonded aluminium fins.

Factory pressure tested to 40Bar.

Sweat copper pipe for brazed connection as standard.

General Description

STANDARD FEATURES

Fan & Motor Assembly

Axial flow fan assembly with low noise blades.

The motor has inbuilt thermal overload protection and the assembly is supplied complete with a finger guard for protection.

The external rotor motor allows the use of a low power output single phase speed controllable motor to power the fan.

CUS 3 - 4

Standard air discharge is horizontal.

CUS 5 - 30D

Standard air discharge is vertical.

C 11 - 50

Standard air discharge is horizontal or vertical, ***please specify at order***.

Compressor
(CUS 3 - 30D)

All units utilise hermetic scroll compressors and:

- Internal thermal motor protection
- Mounted to the base via the use of vibration isolators (CUS3 - 12)
- Internal vibration eliminators (CUS30D)
- Charged with Polyol Ester
- Oil Sump heater (CUS7.5 - 30D)

Refrigeration

CUS 3 - 30D

Each unit features as standard:

- Liquid shut off valve
- Suction shut off valve (CUS 3 - 12)
- High pressure switch
- Low pressure switch
- Filter drier (loose)
- Operating charge (CUS 3 - 4 up to 7m)
- Holding Charge of Inert Gas (CUS 5 - 30D)

C 11 - 50

Each unit features as standard:

- Filter drier (loose)
- Holding Charge of Nitrogen

Electrical

All electrical components are rated for all year round outdoor use.

All wiring is colour coded and numbered for identification. All units are wired in accordance with current local and European standards.

General Description

STANDARD FEATURES

Mains Electric Isolator
(CUS 3 - 12 & C 11 - 50)

A weatherproof mains isolator is fitted to ensure complete unit isolation of the electrical panel during adjustment and maintenance.

Head Pressure Control - Standard (Stand Alone)

CUS 3 - 12 (Variable)

Head pressure is maintained by a factory fitted, pressure actuated, head pressure controller which varies the speed of the fan(s) to provide optimum control under varying ambient conditions.

C 11 - 50 (On/Off)

Head pressure control is maintained via a factory fitted on/off pressure switch rated to IP54 for outdoor use as standard. Good control with ambients down to 0°C, below this temperature variable speed controllers are recommended, available as an optional extra, refer to the ***Optional Extras*** in this section for further information.

Units fitted with thermostatic expansion valves have the head pressure factory set to 17 Barg (247 psig).

Controls
(CUS 3 - 30)

The condensing unit are supplied with electro-mechanical controls to operate via a cooling/heating signal from the indoor unit.

OPTIONAL EXTRAS

Corrosion Resistant Coated Coils

In atmospheres where high corrosion is anticipated a corrosion resistant coating is applied to the aluminium fins of either phenolic or epoxy, dependent upon size.

Coil Guards
(CS50)

Guards can be fitted to each of the outer coils to protect against damage.

Phase Rotation Protection
(CUS 3 - 12)

A phase sequence relay is available for units containing 3 phase scroll compressors, to prevent possible damage by running the compressor in the wrong direction.

Hot Gas Bypass
(CUS 3 - 12 Only)

To achieve capacity control during low load conditions or to maintain suction pressure when used with fresh air systems, the hot gas bypass system will modulate the capacity down to 40% of full load. A stub is provided for site connection of the hot gas line to the local expansion device.

CUS 3 - 4

The hot gas option is supplied as a loose field fit kit

CUS 5 - 12

The hot gas option is factory fitted.

General Description

OPTIONAL EXTRAS

Wall Mounting Brackets
(CUS 3 - 4)

To allow wall mounting a bracket and fixing kit can be supplied.

Short Case Axial Fans
(C 11 - 50)

Short case axial fans can be supplied for indoor installations where discharge air requires to be ducted to an outdoor location. The fans will meet duty plus 75Pa of external static pressure. Refer to the ***Standard Features*** in this section for standard operating features.

Shut Off Valves
(C 11 - 50 Only)

Where required the shut off valves are shipped loose for on site fitment.

Head Pressure Control - Standard (Stand Alone)

C 11 - 50 & CUS30D (Variable)

Head pressure is maintained by a factory fitted, pressure actuated, head pressure controller which varies the speed of the fan(s) to provide optimum control under varying ambient conditions.

Head Pressure Control - Intelligent

As an alternative to the stand alone head pressure control fitted to the Condensing Units or condensers, the system can be fitted with a voltage regulating fan speed controller which allows set point adjustment and system monitoring via the indoor unit AIRETronix microprocessor controller.

Units fitted with optional electronic expansion valves have the head pressure factory set to 14 Barg (203 psig).

For further details please refer to the Indoor Section, ***General Description***.

CUS 3 - 12

The fan speed controller is fitted within the control panel of the **outdoor** condensing unit.

C 11 - 50 (Standard)

As standard the fan speed controller is fitted within the **indoor** unit. This option requires that the electrical supply for the condenser is supplied via the indoor unit.

or

C 11 - 50 (Optional)

The fan speed controller is fitted within a weatherproof enclosure fitted to the **outdoor** condenser unit. This option requires the electrical supply to be connected directly to the condenser.

Mains Electric Isolator
(CUS30D)

A weatherproof mains isolator is fitted to ensure complete unit isolation of the electrical panel during adjustment and maintenance.

LP Start Kit
(CUS30D)

If unit operation in an ambient below -5°C is envisaged, a low pressure start kit can be factory fitted which prevents low pressure nuisance tripping on start up.

Dimensional & Installation Data - Condensing Units CUS 3 - 30D

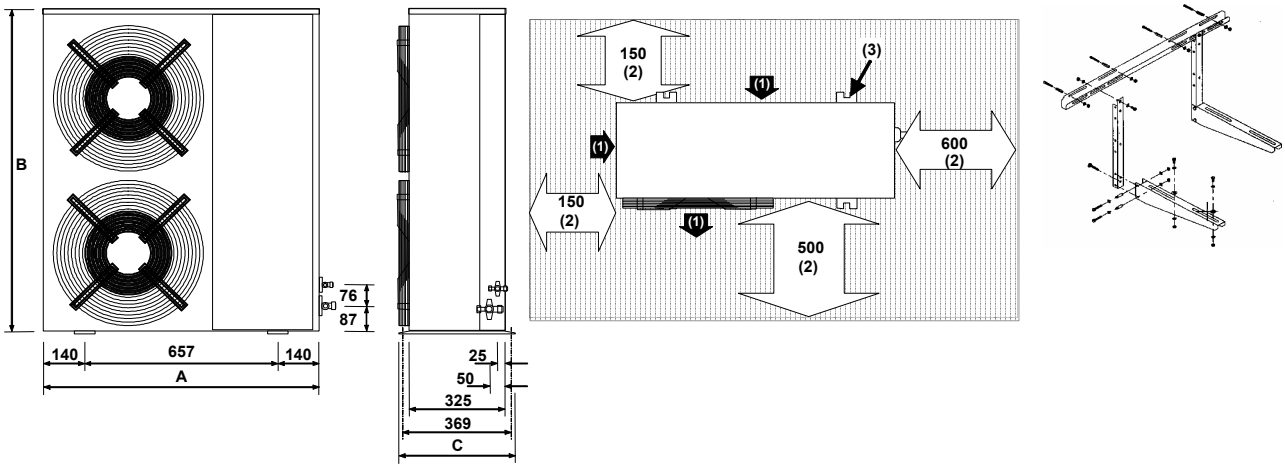
DIMENSIONS / POSITIONING / WEIGHTS

IMPORTANT **Refer to the relevant installation manual for full lifting and positioning information.**

Unit diagrams can be supplied on request.

CUS 3 - 4 (mm)

Optional Wall Bracket

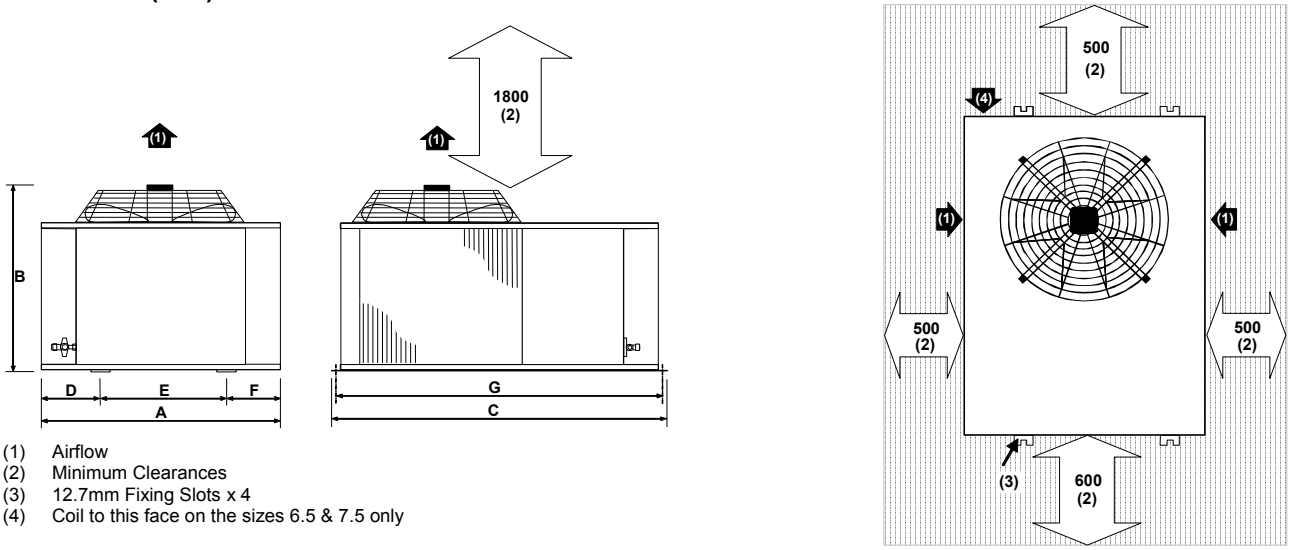


(1) Airflow
(2) Minimum Clearances
(3) 10mm Fixing Slot x 4

	Dimensions	A	B	C	Operating Weights
CUS3	mm	937	1130	395	88.1 kg
CUS4	mm	937	1130	395	104.1 kg

1 Model CUS3 has 1 vertically aligned condenser fan.

CUS 5 - 7.5 (mm)



(1) Airflow
(2) Minimum Clearances
(3) 12.7mm Fixing Slots x 4
(4) Coil to this face on the sizes 6.5 & 7.5 only

	Dimensions	A	B	C	D	E	F	G	Operating Weights
CUS5	mm	865	699	1213	213	457	195	1181	141.0 kg
CUS5.5	mm	865	699	1213	213	457	195	1181	143.0 kg
CUS6	mm	865	699	1213	213	457	195	1181	144.0 kg
CUS6.5	mm	996	699	1441	193	610	193	1409	241.5 kg
CUS7.5	mm	996	699	1441	193	610	193	1409	208.5 kg

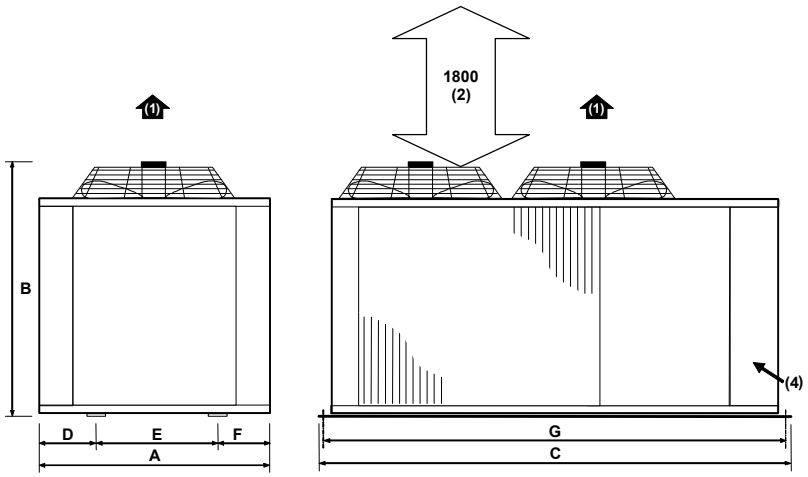
Dimensional & Installation Data - Condensing Units CUS 3 - 30D

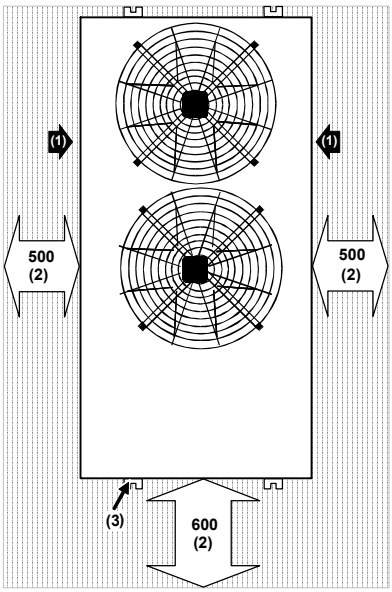
DIMENSIONS / POSITIONING / WEIGHTS

IMPORTANT **Refer to the relevant installation manual for full lifting and positioning information.**

Unit diagrams can be supplied on request.

CUS 8.5 - 12 (mm)

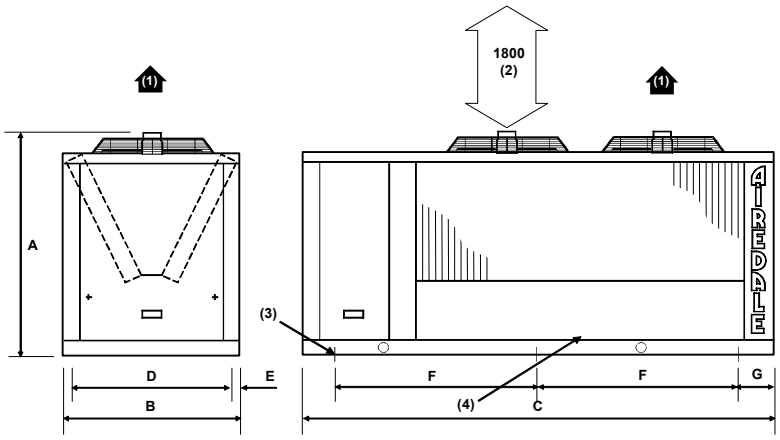


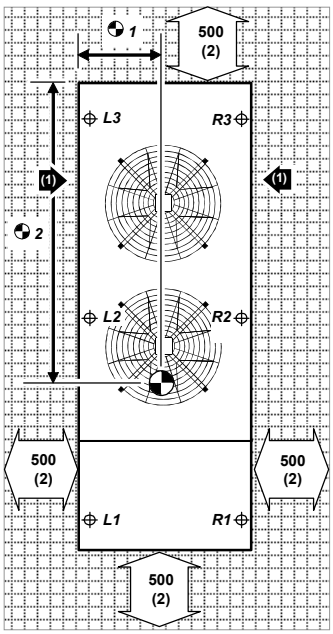


(1) Airflow
(2) Minimum Clearances
(3) 12.7mm Fixing Slots x 4
(4) Incoming Services: Connections to left hand side of unit compressor compartment.

	Dimensions	A	B	C	D	E	F	G	Operating Weights
CUS8.5	mm	865	953	1770	204	457	203	1738	261.0 kg
CUS10	mm	865	953	1770	204	457	203	1738	261.0 kg
CUS12	mm	865	953	1770	204	457	203	1738	266.0 kg

CUS30D (mm)





(1) Airflow
(2) Minimum Clearances
(3) Ø 14mm Fixing holes x 6
(4) Incoming Services: Connections under condenser coil

◔ = Centre of Gravity (C of G)

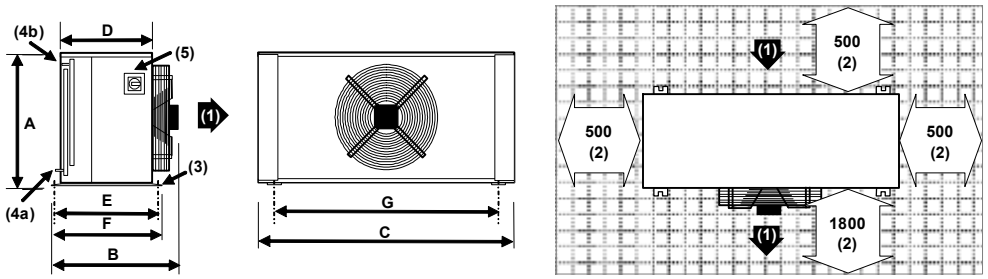
	Dimensions	A	B	C	D	E	F	G	◔ 1	◔ 2
CUS30D	mm	1438	1100	3000	1050	25	1300	200	550	1785
	Point Loadings	**L1**	**L2**	**L3**	**R1**	**R2**	**R3**		**Operating Weights**	
	kg	154	120	78	158	118	77		705	

Dimensional & Installation Data - Condensers C 11 - 50

DIMENSIONS / WEIGHTS / POSITIONING

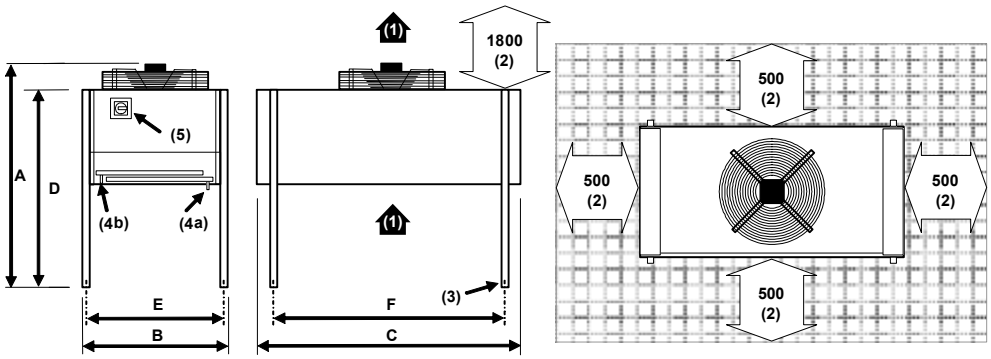
IMPORTANT **Refer to the relevant installation manual for full lifting and positioning information. Unit diagrams can be supplied on request.**

C 11 - 50 - Horizontal (mm)



	DIMENSIONS (MM)									WEIGHTS (KG)	
	Standard Fan							Optional SCAF(7)		Standard Fan	Optional SCAF
	A	B	C	D	E	F	G	B	F		
C11HI-H	648	550	1275	455	530	550	1118	675	640	51	61
C15HI-H	648	550	1275	455	530	550	1118	675	640	63	73
C20HI-H	848	645	1100	455	530	550	944	735	640	58	70
C25HI-H	848	645	1100	455	530	550	944	735	640	65	77
C35HI-H	1048	645	1650	455	530	550	1494	711	640	97	109
C45HI-H	1048	645	1650	455	530	550	1494	711	640	110	134
CS50HI-H	2184	1167	1000	2121	700	132	145	154	2184	1167	1000

C 11 - 50 - Vertical (mm)



	DIMENSIONS (MM)							WEIGHTS (KG)	
	Standard Fan						Optional SCAF(7)	Standard Fan	Optional SCAF
	A	B	C	D	E	F	A		
C11HI-V	997	700	1275	952	630	1118	1112	51	61
C15HI-V	997	700	1275	952	630	1118	1112	63	73
C20HI-V	1092	900	1100	952	830	944	1162	58	70
C25HI-V	1092	900	1100	952	830	944	1162	65	77
C35HI-V	1092	1100	1650	952	1030	1494	1162	97	109
C45HI-V	1092	1100	1650	952	1030	1494	1162	110	134
CS50HI-V	2184	1090	1167	2124	1107	467	1130	1127	132	145

(1) Airflow
(2) Minimum clearances in mm
(3) 8mm fixing points
(4) Service connections to left hand side of the unit: a = Liquid Outlet, b = Discharge Gas Inlet
(5) Mains Electric Isolator, (C50 located behind open side panel)
(6) 4 lifting eye bolts to unit top, size C50
(7) Optional Short Case Axial Fan (SCAF)

CAUTION **A vertical air discharge unit is recommended for installation in windy locations or wherever a horizontal airflow would be obstructed.**

General Specification - Condensing Units CUS 3 - 30D

MECHANICAL DATA

			CUS3	CUS4	CUS5	CUS5.5	CUS6	CUS6.5
Capacity								
Nom Cooling Capacity	(1)	kW	8.7	13.1	13.7	15.2	17.9	19.3
Nom Input	(1)	kW	3.0	3.8	5.1	5.2	6.4	6.6
Capacity Steps		%	0-100	0-100	0-100	0-100	0-100	0-100
Dimensions								
Height		mm	1130	1130	699	699	699	699
Width		mm	937	937	1213	1213	1213	1441
Depth		mm	395	395	865	865	865	996
Weights								
Machine		kg	85.0	101.0	138.0	140.0	141.0	236.5
Operating		kg	88.1	104.1	141.0	143.0	144.0	241.5
Construction								
Material/Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)					
Condenser			Air Cooled - Copper Tube/Aluminium Fins					
Quantity			1	1	2	2	2	3
Total Face Area		m²	0.89	0.89	0.69	0.69	0.69	1.03
Nominal Airflow		m³/s	0.80	1.80	2.00	2.00	2.00	2.25
Discharge			Horizontal	Horizontal	Vertical	Vertical	Vertical	Vertical
Fan & Motor			Axial					
Quantity			1	2	1	1	1	1
Diameter		mm	450	450	630	630	630	630
Maximum Speed		rpm	840	840	930	930	930	930
Compressor			Single - Scroll					
Quantity			1	1	1	1	1	1
Oil Charge Volume (Total)		l	1.10	1.60	1.55	1.65	1.65	4.10
Refrigeration			Single Circuit					
Refrigerant Type			R407C (Optional R22)					
Refrigerant Charge	(2)	kg	1.50	1.50	2.40	2.40	2.40	3.63
Coil Volume	(3)	l	5.12	5.12	8.00	8.00	8.00	12.00
Connections								
Liquid Line		in	Flare 3/8	Flare 1/2	Flare 1/2	Flare 5/8	Flare 5/8	Flare 5/8
Suction Line		in	Flare 3/4	Flare 3/4	Sweat 7/8	Sweat 7/8	Sweat 7/8	Sweat 1 1/8
Hot Gas Stub		in	1/2	1/2	5/8	5/8	5/8	5/8

			CUS7.5	CUS8.5	CUS10	CUS12	CUS30D
Capacity							
Nom Cooling Capacity	(1)	kW	21.0	23.6	27.4	35.7	80.7
Nom Input	(1)	kW	6.6	8.0	10.0	11.5	28.8
Capacity Steps - Per Circuit		%	0-100	0-100	0-100	0-100	0-100
Dimensions							
Height		mm	699	953	953	953	1438
Width		mm	1441	1770	1770	1770	3000
Depth		mm	996	865	865	865	1100
Weights							
Machine		kg	203.5	242.0	242.0	247.0	695
Operating		kg	208.5	261.0	261.0	266.0	705
Construction							
Material/Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)				
Condenser			Air Cooled - Copper Tube/Aluminium Fins				
Quantity			3	2	2	2	2
Total Face Area		m²	1.03	1.37	1.37	1.37	3.46
Nominal Airflow		m³/s	2.25	4.45	4.45	4.45	6.80
Discharge			Vertical	Vertical	Vertical	Vertical	Vertical
Fan & Motor			Axial				
Quantity			1	2	2	2	3
Diameter		mm	610	610	610	610	610
Maximum Speed		rpm	930	930	930	930	930
Compressor			Single - Scroll				
Quantity			1	1	1	1	2
Oil Charge Volume (Total)		l	3.25	3.80	3.80	4.00	6.60
Refrigeration			Single Circuit				Dual Circuit
Refrigerant Type			R407C (Optional R22)				
Refrigerant Charge	(2)	kg	3.63	4.76	4.76	4.76	9.00
Coil Volume - per circuit	(3)	l	12.00	15.70	15.70	15.70	21.0
Connections							
Liquid Line		in	Flare 5/8	Sweat 7/8	Sweat 7/8	Sweat 7/8	Sweat 5/8
Suction Line		in	Sweat 1 1/8	Sweat 1 1/8	Sweat 1 1/8	Sweat 1 3/8	Sweat 1 3/8
Hot Gas Stub		in	5/8	7/8	7/8	7/8	N/A

(1) Nominal Capacity based on 5°C evaporating temperature and a 35°C ambient.
(2) CUS 3 - 4 are precharged with refrigerant. CUS 5 - 30D are supplied with holding charge of inert gas.
(3) Figures for guidance.

General Specification - Condensing Units CUS3 - CUS30D

ELECTRICAL DATA

			CUS3	CUS4	CUS5	CUS5.5	CUS6	CUS6.5
Unit Data	(1)							
Nominal Run Amps		A	7.1	9.5	11.1	11.9	13.8	15.7
Maximum Start Amps		A	46.6	67.0	71.1	76.1	106.6	104.6
Recommended Mains Fuse Size		A	16	20	20	20	25	25
Max Mains Incoming Cable Size		mm²	6	6	10	10	10	10
Mains Supply		V	400V / 3Ph +N / 50Hz					
Control Circuit		VAC	230	230	230	230	230	230
Fan - Per Fan								
Motor Size		kW	0.15	0.15	0.59	0.59	0.59	0.59
Full Load Amps		A	0.65	0.65	2.80	2.80	2.80	2.80
Locked Rotor Amps		A	2.60	2.60	5.60	5.60	5.60	5.60
Compressor - Per Compressor								
Nominal Run Amps	(1)	A	6.4	8.2	8.3	9.1	11.0	12.9
Locked Rotor Amps		A	44	61.8	65.5	70.5	101.0	99.0
Motor Size		kW	2.9	4.0	4.45	5.3	5.9	6.65
Oil Sump Heater Rating		W	N/A	N/A	N/A	N/A	N/A	N/A
Type of Start			Direct on Line					

			CUS7.5	CUS8.5	CUS10	CUS12	CUS30D
Unit Data	(1)						
Nominal Run Amps		A	15.3	20.1	21.7	28.5	56.8
Maximum Start Amps		A	103.6	131.2	131.2	156.2	207.6
Recommended Mains Fuse Size		A	25	32	40	40	80
Max Mains Incoming Cable Size		mm²	10	10	10	10	35
Mains Supply		V	400V / 3Ph +N / 50Hz				
Permanent Supply		V	N/A	N/A	N/A	N/A	230V/ 1PH +N / 50Hz
Rec. Permanent Fuse		A	N/A	N/A	N/A	N/A	4
Max Permanent Incoming Cable Size		mm²	N/A	N/A	N/A	N/A	2.5
Control Circuit		VAC	230	230	230	230	24
Fan - Per Fan							
Motor Size		kW	0.59	0.59	0.59	0.59	0.55
Full Load Amps		A	2.80	2.80	2.80	2.80	2.50
Locked Rotor Amps		A	5.60	5.60	5.60	5.60	5.80
Compressor - Per Compressor							
Nominal Run Amps	(1)	A	12.5	14.5	16.1	22.9	24.2
Locked Rotor Amps		A	98.0	120.0	120.0	145.0	175.0
Motor Size		kW	6.84	8.5	8.9	11.84	13.4
Oil Sump Heater Rating		W	50	50	50	50	75
Type of Start			Direct on Line				

(1) Nominal data based on 5°C evaporating temperature and a 35°C ambient.

General Specification - Condensers C 11 - 50

MECHANICAL DATA

			C11HI	C15HI	C20HI	C25HI	C35HI	C45HI	CS50HI
Total Heat of Rejection	(1)	kW	10.98	16.49	20.18	25.57	30.29	46.09	46.7
Dimensions - Horizontal	(2)								
Height		mm	648	648	848	848	1048	1048	1167
Depth		mm	550	550	645	645	645	645	1000
Width		mm	1275	1275	1100	1100	1650	1650	2184
Dimensions - Vertical	(2)								
Height		mm	997	997	1092	1092	1092	1092	1090
Depth		mm	700	700	900	900	1100	1100	1167
Width		mm	1275	1275	1100	1100	1650	1650	2184
Weight									
Machine		kg	51	63	58	65	97	110	132
Construction									
Material/Colour			Galvanised Sheet Steel, Epoxy Baked Powder Paint - Light Grey (RAL 7035)						
Condenser			Air Cooled - Copper Tube/Aluminium Fins						
Quantity			1	1	1	1	1	1	1
Total Face Area		m²	0.675	0.675	0.800	0.800	1.600	1.600	2.110
Nominal Airflow		m³/s	1.200	1.900	2.000	2.250	2.350	4.450	4.800
Discharge			**-H** Horizontal or **-V** Vertical (***Please Specify at Order***)						
Fan & Motor			Axial						
Quantity			1	2	1	1	1	2	2
Diameter		mm	450	450	630	630	630	630	630
Maximum Speed		rpm	930	930	900	900	900	900	900
Refrigeration			Single Circuit						
Refrigerant Type			R407C (Optional R22)						
Holding Charge			Inert Gas						
Coil Volume		l	5.3	5.3	6.1	8.1	15.7	15.7	25.6
Refrigerant Charge	(3)	kg	2.1	2.1	2.3	3.1	6.1	6.1	4.3
Connections									
Liquid Line - Sweat		in	1/2	1/2	5/8	5/8	7/8	7/8	3/4
Discharge Line - Sweat		in	5/8	5/8	7/8	7/8	7/8	7/8	1 1/8
OPTIONAL EXTRAS									
Short Case Axial Fan			Designed to 75 Pa ESP						
Dimensions - Horizontal									
Height		mm	648	648	848	848	1048	1048	1167
Depth		mm	675	675	735	735	711	711	1000
Width		mm	1275	1275	1100	1100	1650	1650	2184
Dimensions - Vertical									
Height		mm	1112	1112	1162	1162	1162	1162	1130
Depth		mm	700	700	900	900	1100	1100	1167
Width		mm	1275	1275	1100	1100	1650	1650	2184
Weight									
Machine		kg	61	73	70	77	109	134	145

(1) Nominal data based on 35°C ambient and a 50°C mean condensing temperature and using standard fan.
(2) Overall dimensions for clearance; refer to ***Dimensional & Installation Data - Condensers C 11 - 50*** for detail.
(3) For guidance only.

ELECTRICAL DATA

			C11HI	C15HI	C20HI	C25HI	C35HI	C45HI	CS50HI
Unit Data	(1)								
Nominal Run Amps		A	0.65	1.30	2.80	2.80	2.80	5.60	5.80
Maximum Start Amps		A	2.60	5.20	5.60	5.60	5.60	11.20	11.20
Recommended Mains Fuse		A	10	10	10	10	10	10	10
Max Mains Cable Incoming		mm²	10	10	10	10	10	10	6
Mains Supply			230V / 1Ph + N / 50Hz						
Fan - Per Fan									
Quantity			1	2	1	1	1	2	2
Motor Size		kW	0.15	0.15	0.59	0.59	0.59	0.59	0.63
Full Load Amps		A	0.65	0.65	2.80	2.80	2.80	2.80	2.90
Locked Rotor Amps		A	2.60	2.60	5.60	5.60	5.60	5.60	5.60
OPTIONAL EXTRAS									
Short Case Axial Fan - Per Fan									
Quantity			1	2	1	1	1	2	2
Motor Size		kW	0.61	0.61	1.40	1.40	1.40	1.40	1.40
Full Load Amps		A	2.80	2.80	6.00	6.00	6.00	6.00	6.00
Locked Rotor Amps		A	7.00	7.00	18.00	18.00	18.00	18.00	18.00

(1) Nominal data based on 35°C ambient and a 50°C mean condensing temperature and using standard fan.

Sound Data - Condensing Units CUS 3 - 30D

METHOD OF SOUND MEASUREMENT

Measurement of Sound Data

All sound data quoted has been measured in the third-octave band limited values, using a Real Time Analyser calibrated sound intensity meter in accordance with BS EN ISO9614 Part 1 : 1995.

All Sound Power Levels quoted are calculated from measured sound intensity according to BS EN ISO9614 Part 1 : 1995.

Semi Hemispherical

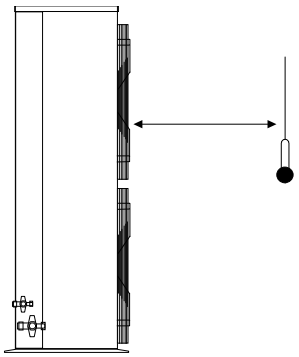
CUS 3 - 12

Sound Pressure Levels are calculated from sound power using the semi-hemispherical method where the noise source is in junction with 2 boundaries i.e. the floor and 1 wall.

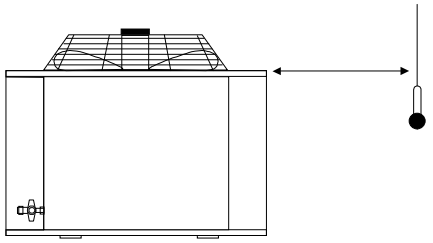
CUS 30D

Sound Pressure Levels are valid in free field conditions, where a reflective base, such as a roof is found.

CUS 3 - 4



CUS 5 - 30D



CONDENSING UNITS - CUS 3 - 12

	Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
				63	125	250	500	1000	2000	4000	8000
CUS3	Power		71	80	79	71	67	66	60	55	47
	Pressure	@ 10m	43	52	51	43	39	38	32	27	19
CUS4	Power		73	81	79	75	72	66	64	57	48
	Pressure	@ 10m	45	53	51	47	44	38	36	29	20
CUS 5 - 6	Power		80	80	81	79	78	76	68	61	54
	Pressure	@ 10m	52	52	53	51	50	48	40	33	26
CUS 6.5 - 7.5	Power		81	81	79	82	79	77	72	65	58
	Pressure	@ 10m	53	53	51	54	51	49	44	37	30
CUS 8.5 - 12	Power		82	88	85	81	80	77	71	64	55
	Pressure	@ 10m	54	60	57	53	52	49	43	36	27
CUS30D	Power		86	88	81	83	83	82	78	72	64
	Pressure	@ 10m	58	60	53	55	55	54	50	44	36

1 Levels are quoted with the condenser fan running at full speed. Under normal operating conditions (ambients up to 35°C) noise levels will be reduced by 3 - 4 dB.

Sound Data - Condensers C 11 - 50

METHOD OF SOUND MEASUREMENT

Measurement of Sound Data

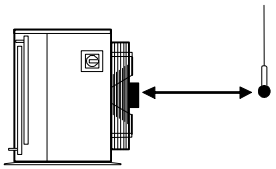
All sound data quoted has been measured in the third-octave band limited values, using a Real Time Analyser calibrated sound intensity meter in accordance with BS EN ISO9614 Part 1 : 1995.

All Sound Power Levels quoted are calculated from measured sound intensity according BS EN ISO9614 Part 1 : 1995.

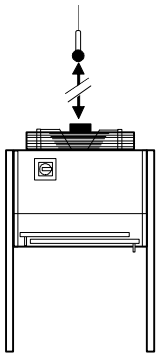
Semi Hemispherical

Sound Pressure Levels are calculated from sound power using the semi-hemispherical method where the noise source is in junction with 2 boundaries i.e. the floor and 1 wall.

Horizontal



Vertical



SOUND DATA

Standard Condenser Fan - Horizontal

	Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
				63	125	250	500	1000	2000	4000	8000
C11HI-H	Power		67	56	58	63	64	63	61	55	47
	Pressure	@ 10m	39	28	30	35	36	35	33	27	19
C15HI-H	Power		70	59	61	66	67	66	64	58	50
	Pressure	@ 10m	42	31	33	38	39	38	36	30	22
C20HI-H	Power		79	78	87	76	73	74	70	62	55
	Pressure	@ 10m	51	50	59	48	45	46	42	34	27
C25HI-H	Power		79	78	87	76	73	74	70	62	55
	Pressure	@ 10m	51	50	59	48	45	46	42	34	27
C35HI-H	Power		79	78	87	76	73	74	70	62	55
	Pressure	@ 10m	51	50	59	48	45	46	42	34	27
C45HI-H	Power		82	81	90	79	76	77	73	65	61
	Pressure	@ 10m	54	53	62	51	48	49	45	37	33
CS50HI-H	Power		81	84	89	77	77	76	73	66	65
	Pressure	@ 10m	53	56	61	49	49	48	45	38	37

Standard Condenser Fan - Vertical

	Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
				63	125	250	500	1000	2000	4000	8000
C11HI-V	Power		68	53	61	63	64	64	62	56	48
	Pressure	@ 10m	40	25	33	35	36	36	34	28	20
C15HI-V	Power		71	56	64	66	67	67	65	59	51
	Pressure	@ 10m	43	28	36	38	39	39	37	31	23
C20HI-V	Power		80	75	92	76	73	75	71	63	56
	Pressure	@ 10m	52	47	64	48	45	47	43	35	28
C25HI-V	Power		80	75	92	76	73	75	71	63	56
	Pressure	@ 10m	52	47	64	48	45	47	43	35	28
C35HI-V	Power		80	75	92	76	73	75	71	63	56
	Pressure	@ 10m	52	47	64	48	45	47	43	35	28
C45HI-V	Power		83	78	95	79	76	78	74	66	62
	Pressure	@ 10m	55	50	67	51	48	50	46	38	34
CS50HI-V	Power		83	81	93	77	77	78	74	68	67
	Pressure	@ 10m	55	53	65	49	49	50	46	40	39

1 Figures quoted using standard condenser fan(s) running at full speed under normal operating conditions.

Notes:

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A MODINE Company

PART NO:	ISSUE	DATE
6258867	A	01/06/07
	C	09/2011
	D	01/2012
	E	06/2012
	F	07/2012